Locating Creativity in Design Practice

by Erin Stripe

Submitted to OCAD University in partial fulfillment of the requirements for the degree of Master of Design in Strategic Foresight & Innovation.

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Abstract

Creativity is often implicitly understood but seldom detailed in design paradigms and practices.

It is supposed to happen, but how it unfolds in these contexts is underexplored and disconnected from existing disciplinary research. This research paper uses generative design research methods to explore the relationship between creativity and design in real-world design contexts and from the viewpoint and experiences of practitioners. It aims to move beyond simply accepting creativity's hidden role in design practice by surfacing how it emerges and works to understand it better and inform designers of how it might actively be cultivated and practiced alongside design tasks.

With more cross-over between fields, the notoriety of design thinking, and an expanding set of methods, tools, and techniques, some of which claim to be inherently creative, paying attention to the nuances of creativity is valuable in an evolving design landscape focused on new and improved ways of thinking, doing, and innovating. The findings highlight creativity's dynamic and sometimes contentious nature in current practices, offering practical insights and implications, connections to relevant creativity theory, and contributing to a deeper contextual understanding of creativity in design practice.

Learn more at
www.locatingcreativity.com

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PART ONE: NAVIGATING OBSCURE TERRAIN

PROLOGUE

Creativity was not clicking for me—at least not like it did the first time. This project came together while attending a graduate design program at an art and design school—where the relationship between creativity and design was meant to be obvious, and it was not to me. My first time at design school mixed art, craft, and design traditions in a program called Material Art and Design and formed the basis of what I understood about creativity and how to apply it. For me, creativity situated itself in practices of exploration, expression, concept, form, and function. Later, creativity expanded to include dimensions of communication, influenced by my marketing career.

This time around, the next versions of design I was learning needed an openness to possibilities, bold curiosity, feral imagination, and originality in thinking and production—to me, all creative acts—while emphasizing structured frameworks and processes, interdisciplinary collaboration, and operating under the assumption that wherever design ventures, creativity inevitability follows. After two years of being deeply engaged in these design paradigms and despite assurances from the field, including academics, method-makers, and thought-leaders, that this was all a very creative business, I thought that was only partly true.

I wondered what the directive to "be creative" meant in a room of designers with varying interests, expertise, and exposure to applied creativity. Brainstorming and visual presentation strongly held creative contributions in the classroom. Did creativity even matter in this design context? How did creativity unfold in professional practice? Its abstract qualities added to its interest and contributed to its incomprehensibility. Generative design research methods seemed well suited to exploring these questions, creativity's massive and abstract domain, and its relationship to design paradigms and practice.

And here we are.

REFLEXIVITY

My design background and evolving relationship with creativity significantly shaped this research. This proximity could be viewed as bias. My rural upbringing, education, the privilege to pursue a master's degree in design, professional experience in the private sector, and city-dwelling lifestyle have all shaped my understanding of creativity. I approached this project, the work, and the people who contributed to it with an openness and a willingness to explore the many themes and experiences.

INTRODUCTION

In the realms of design and its affiliated fields of research, education, and business, it is widely acknowledged that creativity is fundamental to design practice (Brown, 2019; Christiaans, 2002; Lockwood, 2010). Delving deeper than this general acknowledgment, my review of design and creativity literature combined with reflections on my personal experiences (see Prologue) has uncovered a prevailing ambiguity regarding the role of creativity in design. While hailed as the pinnacle of design activity (Christiaans, 2002), creativity seemed to be seldom detailed and frequently assumed within design paradigms. This assumption formed the basis for the project.

Askland et al. (2010) posited that creativity was often addressed indirectly in design studies, typically by analyzing design problems, processes, and products, arguing that this indirect approach had significant theoretical and practical repercussions. Their research suggested that the assumption of a close and well-understood relationship between creativity and design had restricted the scope of discourse and research on creativity within the design field and isolated it from the broader, established body of creativity research (Askland et al.,2010). This critique identified a disconnect that was echoed in contemporary methods such as design thinking. Although design thinking was celebrated as an effective strategy for problem-solving (Cross, 2011), it often failed to provide a nuanced understanding of how creativity actually manifested, despite claims to the contrary (Gauntlett, 2023; von Thienen et al., 2023). This analysis highlighted the problematic nature of perceiving creativity in design as an implicit and passive element, a perspective that potentially undermined the advancement of both creative and design practices.

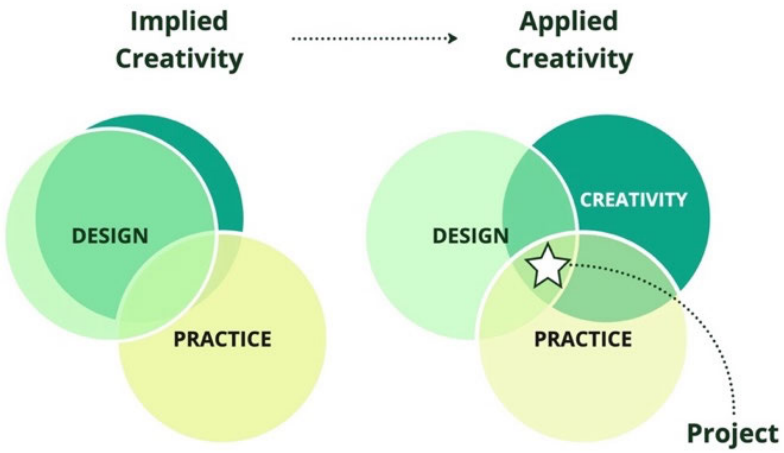


Figure 1 Locating the project.

OBVIOUS & INVISIBLE

By digging into the implicit and sometimes obvious but not well-understood nature of creativity, my goal was to shift away from the implied creativity narrative and toward locating creativity in real-world design applications and contexts. To achieve this, I aimed to look at creativity as a distinct concept in relation to design practice, as illustrated in Figure 1. An exploratory journey in methodology and intent followed using a design-led research approach. This included literature reviews, interviews, and participatory activities to uncover experiences of creativity and applications of creativity from the views of design practitioners. Together, we contemplated: *How does creativity happen in design practice?*

RELEVANCE & IMPACT

From a theoretical perspective, literature reviews by Askland et al. (2010) indicated that design literature has emphasized the more rational and, perhaps coincidentally, more easily explainable aspects of design, often relegating the concept of creativity to a handful of pioneering individuals and speculative discussions. They noted that the design field is noticeably underrepresented in creativity research, and designers are often overlooked as a target audience for these studies (Askland et al., 2010). More exploration at the intersection of design and creativity could help achieve a more balanced understanding of both fields, highlighting dynamics and influential interactions that might complement each other.

According to Nelson and Stolterman (2012) in The Design Way, two important aspects of design reliant on creativity were generating new concepts or objects, referred to as creating 'the not-yet-existing' (p.127), and envisioning future scenarios, termed 'that-which-hadn't-happened-yet' (p. 127). Despite the availability of numerous design methods to meet these tasks, Biskjaer et al. (2017) observed that many overlook or underemphasize creativity, which they describe as a ‘silent’ but vital partner (para. 2). This highlighted the significance of creativity in design practice, its subtle integration into methods, and prompted reflection on how designers actively engage with creativity in their work.

Distinguishing the differences between 'doing' creativity—actively engaging in creative tasks, as discussed by Gauntlett (2023), and 'being' creative—integrating creativity more naturally and often spontaneously into one's work (Csikszentmihalyi, 1996 p.) is valuable for a field comprised of people with different access and perceptions of creativity. Designers are often tasked with creative assignments and are expected to employ creativity in their methods. Understanding the subtleties of spontaneous creativity and deliberate practice can enhance how individuals approach design and how design methods assist practitioners. This insight can also support designers in actively and consciously accessing their creative potential.

Jon Kolko's Design is a Mess (2022) highlighted misunderstandings about creativity that significantly affect design. Kolko pointed out that efforts to confine creativity within narrow business practices have left design in a precarious balance—oscillating between being a source of valuable innovation and descending into chaos. The implications of oversimplifying creativity extend to how it is developed and applied, potentially impacting the broader scope and responsibility of design practices.

Efforts to better access, think about, cultivate, and discuss creativity in design contexts are mutually beneficial. They provide practical and theoretical clarity to both fields, contributing to a deeper contextual understanding and application of creativity. This, in turn, benefits designers and those affected by their ideas and creations, enriching both the creative process and its outcomes.

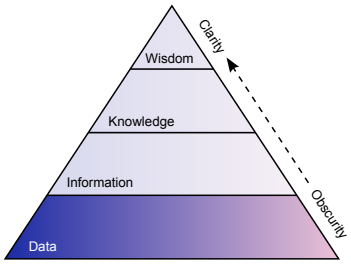
The following pages tell the story in four parts using the *Data, Information, Knowledge, Wisdom* (DIKW) model illustrated in Figure 2 to show the progression of research from data to wisdom (Ackoff,1989). Each chapter represents a stage of progression, moving from obscurity to clarity through the research process and following the transformation of information from data to organized information, interpreted knowledge, and applied wisdom.

Report Narrative

PART ONE

Navigating Obscure Terrain

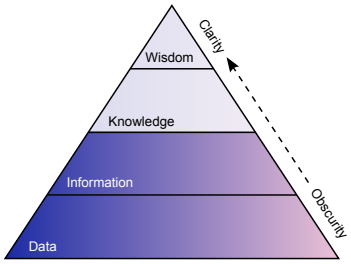
Introduces the project by exploring the reasons behind focusing on creativity and design practice at this moment. It provides essential contextual and background information to frame the project and guide the research approach.
(FIRST LEVEL)



PART TWO

Convivial Methodology

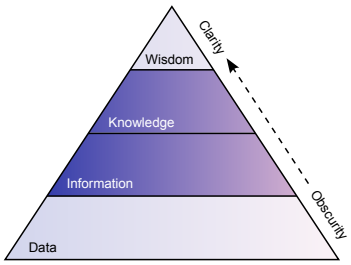
Describes the generative design research methodology adapted from the Convivial Toolbox (Sanders & Stappers, 2020), the specific methods employed, and reflections on the chosen approach.
(FIRST & SECOND LEVEL)



PART THREE

Picturing Creativity

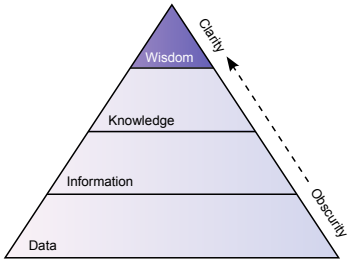
Presents the techniques for analyzing data, and the creativity insights gleaned from participant activities and interviews.
(SECOND & THIRD LEVEL)



PART FOUR

Forms of Creativity in Practice

Synthesizes the insights gathered and further conceptualizes the findings, connecting them explicitly to broader theories of creativity and design.
(FOURTH LEVEL)



PART FIVE

Conclusion & Next Steps

Offers concluding remarks, summarizes the research findings, and proposes directions for future work.

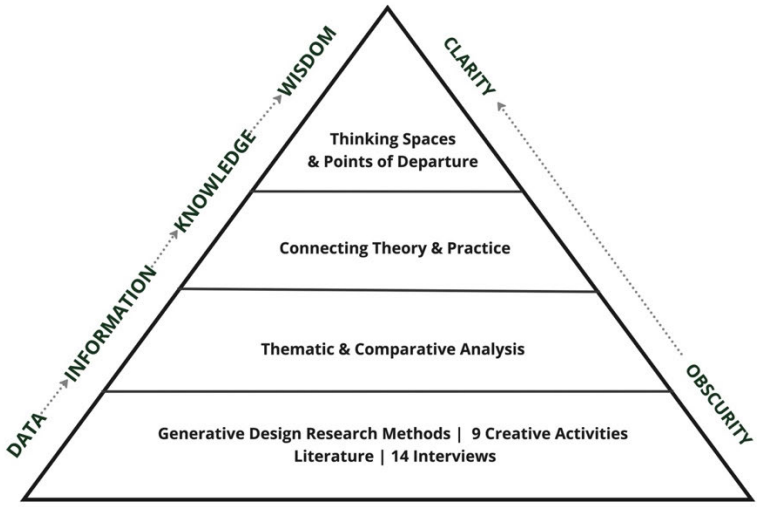


Figure 2 The DIKW model. (Adapted)

CREATIVITY IN CONTEXTS

This section offers a view of the evolving role of creativity across various sectors, emphasizing its perceived value and applications. It also outlines a broader system in which the knock-on effects of creativity and design might be seen, considering the extensive impact designers have on society and those affected by their ideas and creations.

The World Economic Forum's Future of Jobs Report (2023) highlighted a growing interest in creative thinking, emphasizing its crucial role in adapting to rapidly changing and disrupted work environments. In Canada, it was ranked third in importance, following AI/big data and analytical thinking, thus underscoring the significance of creativity alongside logical and efficiency-driven skills. Despite this recognition, a common tension arose from attempting to prioritize two fundamentally opposing concepts: work environments that favoured logic, efficiency, and control often unintentionally stifled creativity (Amabile, 2014), illustrating the complexity of integrating creativity within professional settings. Misunderstandings of creativity have led to the proliferation of emblems of creativity, such as aesthetically pleasing environments that called to mind the game rooms, catering, and other indulgences often found in Silicon Valley rather than fostering genuinely creative conditions (Brown, 2019). Neil Stevenson, a creative coach and former IDEO studio leader, described a massive gap around creativity where people talked about its value and expressed a desire for it, yet struggled to define and understand it (2018). It reflected a broader and ongoing challenge in fully operationalizing creativity in the workplace.

A CREATIVITY PARADOX

Echoing Mihaly Csikszentmihalyi's view that "creativity was no longer a luxury for some, but a necessity for all" (1996, pp. 2-12), the pressing question of how to get there without undermining creativity remained. Narrowing creativity to only '*creative thinking'*—a cognitive skill (Brouwer, 2018) —risked oversimplification and potentially disconnected it from the vital embodied experiences and contextual nutrition known to enrich it (Gauntlett, 2023, pp.1-10). *The Future of Jobs Report* (2023) highlighted

a resource gap for upskilling in creative thinking, emphasizing the urgent need to cultivate adult creativity. Despite widespread acknowledgment of its importance, effectively defining and integrating creativity into traditional settings has been challenging, especially considering the diverse perceptions and expressions of creativity that individuals brought to their professional roles. This tension—between the need for fresh, innovative ideas and the security of established methods—created a '*creativity paradox*' working against the imperative for predictable timelines and efficiencies that organizations and designers had to navigate. They needed to balance fostering innovation with maintaining reliable practices.

EMERGENT TECHNOLOGY

Nicholas Carr's *The Shallows* (2012), published almost twelve years ago, highlighted the adverse effects of the internet and social media on our cognitive functions. This concern has only grown with time. Since creative potential hinges on the capacity for deep attention (Csikszentmihalyi, 1996), the adverse effects of the internet posed significant constraints to creativity with frequent distractions and manipulative design tactics like endless scrolling to keep users 'engaged' (Carr, 2012). The pervasive culture of constant connectivity was tied to increased burnout, mental health issues, and employee dissatisfaction, frequently discussed in Western media and explored by artist and educator Jenny Odell (2019) in her book *How to Do Nothing*. Odell advocated disengaging from the attention economy through personal experiences and examples from the art world, suggesting ways to reclaim attention, redefine productivity, and indirectly preserve creativity.

In digital media, the *2024 Accenture Life Trends Report* linked widespread dissatisfaction with digital content to an overreliance on data-driven design and 'middling' technology, which now act as tastemakers and gatekeepers. The report warned that depending too heavily on AI for creative processes could lead to a future filled with uninspired content and products, ultimately draining creative talent over time (Accenture Song, 2024). The dilemma of choosing between short-term gains and long-term creative sustainability demonstrated the potential to erode investments in creative people and work by prioritizing efficiency and short-term outcomes. The archetype in Figure 3 illustrates how market-driven, short-term approaches to creativity could inadvertently stifle long-term innovation and how we pay attention to and engage our creative capacity. The impacts of these decisions are difficult to comprehend if the valuation of creativity shifts with fleeting consumer demands and without a clear picture of creativity as a broader system, requiring many inputs over time.

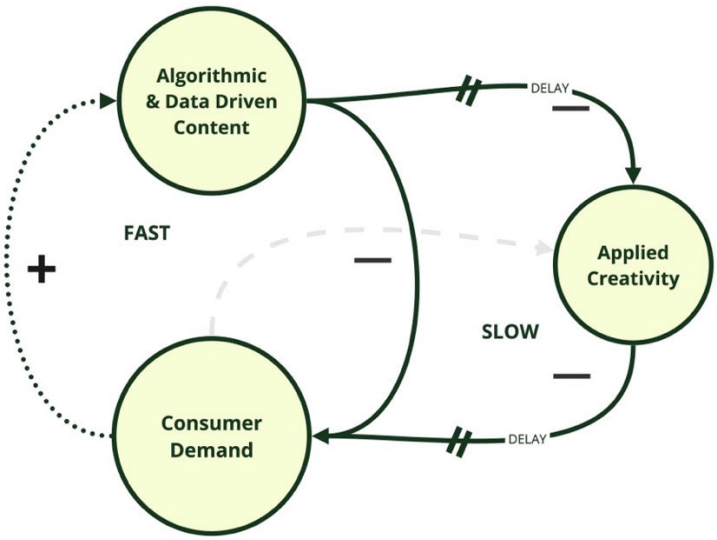


Figure 3 'Fixes that Fail' causal loop in digital content creation.

Recent advancements in generative artificial intelligence (AI) have deepened debates about the essence of creativity. In a 2022 interview, David Holz, founder of Midjourney—an AI tool for creating images, texts, and videos—envisioned a future marked by 'aesthetic accelerationism,' predicting the widespread online proliferation of visual styles and 'remixes' through public AI tools (Vincent, 2022). Critics argued that while execution had been democratized, the quality of ideas remained a concern (Chayka, 2023), raising a myriad of ethical and attribution concerns by challenging accepted methods of creating, sharing, and attributing works. Increasing access to these tools was also viewed as opening the door to technical creation otherwise unavailable and providing seasoned creators with new and exciting ways to push their limits. Such developments have prompted a rethinking of traditional views on human creativity and the value of creative work.

These technological advancements are transforming how we perceive and utilize creativity, bringing to the forefront questions about human creative abilities and concerns about disregarding their current and future value. Recent developments have sparked widespread public discussion on the nature of creativity, creative thinking, and creative work, prompting us to reconsider who or what possesses creative capacity. The shift towards fitting creativity and creative practice into hyper-efficient production machines underlined the tension between conventional, human-centric methods and emerging machine-based creative programming that prioritizes efficiency and predictability. Thinking about creativity is timely given the contrasting humanistic and mechanistic views (Vicente, 2004), the ongoing desire for it, and the challenges in achieving it while meeting contemporary business market demands.

A BRIEF HISTORY OF CREATIVITY

Widespread interest in creativity as a crucial research area, psychological trait, educational, and economic goal sparked in the 1950s when psychologist J.P. Guilford called for more creativity research in a presidential address on behalf of the *Professional Association of Psychologists* (Guilford, 1950), broadening the application of creativity beyond art to include fields like science, technology, and advertising (Franklin, 2023). From this juncture, tremendous energy went towards characterizing the 'creative person' and measuring creativity potential (Kim, 2006). Design-relevant discoveries included brainstorming, the concept of divergent thinking—the ability to generate multiple ideas or solutions (Runco & Acar, 2019). Efforts from this period deeply informed Western views of creativity (Franklin, 2023). Of interest to this project was the seeded belief that creativity and creative thinking were keys to stimulating innovation and driving economic growth (Lockwood, 2010).

Creativity emerged as a pivotal force for change and a marker of prosperity at the dawn of the 21st century, sparking the concept of the 'creative economy.' This framework envisioned core creative fields transforming intangible goods like information into novel and valuable products, unlocking vast economic opportunities (McGuinness, 2021; Clark & Smith, 2010). In the *Conceptual Age* thesis, Daniel Pink posited that as we transition from the *Information Age* to the *Conceptual Age*, right-brain qualities such as inventiveness, empathy, joyfulness, and the capacity to find meaning would be just as vital as logic and analysis for achieving success. Pink argued that in a world where routine tasks can be automated and outsourced, these distinctly human attributes would become crucial differentiators in the workforce (Pink, 2004). Echoing this sentiment, Sir Ken Robinson's influential TED Talk advocated for treating creativity with the same importance as literacy, urging educational systems to nurture rather than stifle creativity in children (Robinson, 2006). Creativity became very useful in creating usefulness and value.

CRITIQUING CREATIVITY

The concept of creativity has also sparked criticism. In Against Creativity, Oli Mould (2020) argued that capitalist systems exploited creativity based on progress and productivity while sustaining inequality and suppressing 'true innovation' and social justice. Drawing attention to the 'creative' financial practices like the innovation of sub-prime mortgages, creating enormous household debt leading to the 2008 economic crisis. Mould (2020) contended that the widespread 'creatification' of jobs, a trend fueled by Richard Florida's controversial *creative class* theory (Florida, 2019), often perpetuated social disparities, where the influx of creative professionals into cities often rendered it unaffordable except for a privileged few.

In response to criticisms of creativity as unstable or a facade for a flawed system, calls were placed to rethink creativity beyond utilitarianism and commodification. This involved questioning conventional notions of labour, innovation, and the ratification of the 'creative individual' and envisioning creativity beyond capitalism's dominance (Franklin, 2023; Mould, 2020). Notably, a growing emphasis on maintenance and repair culture, highlighted the undervalued labour that sustained existing systems. Advocates argued for prioritizing sustaining what we had over constantly pursuing new creations (Russell & Vinsel, 2018; Franklin, 2023). Though briefly discussed here, these perspectives challenged the traditional views of creativity, pushing us to reconsider it not solely as producing something new and perhaps emphasizing a creation's value and contextual appropriateness when perceiving and employing creativity.

CREATIVITY & INNOVATION

From an innovation perspective, creativity was essential in driving disruptive innovations, challenging industry norms, and reshaping markets (Christiaans, 2002; Stanford d.School, 2024). It is often viewed as two sides of the same coin, where creativity represents an idea for change, and innovation is the process to make that change happen (Amabile, 1988) it is reasonable to see how the dynamics of creativity are easily conflated with innovation-speak. David Gauntlett (2023) pointed out this mix-up and the implications of absorbing business-centric views, cautioning that a narrow view that assigned creativity solely to idea generation, products, or problems risked setting aside processes known to be valuable to creative practitioners. The nuanced aspects of collaboration, empathy, and learning from failure, central to design thinking, were drawn out to demonstrate that in creative practice, as concepts, they extended beyond tasks in a process. Where collaboration involves working together and fostering awareness of one's practice, that empathy extends beyond products and users to encompass a broader connection. And that failure didn't need to be a pressured fail-rate metric, emphasizing the importance of learning from mistakes in a supportive environment (pp.1-17). Gauntlett (2020) also stressed the risk of overlooking creativity as an active human activity integral to meaning-making, embodiment, and communication.

DESIGN SHIFTS

A shift in the field led to new design disciplines focused on experiences, services, processes, and complex systems (Sanders & Stappers, 2020; Jones & Van Ael, 2022). This expansion transformed the roles of designers to encompass research, business strategy, innovation, sustainability, envisioning emerging futures, and more. Design attention drifted toward emergent possibilities and away from deterministic solutions (Lockwood, 2010). Employing a distinctive toolkit, designers navigated these varied and dynamic environments through 'designerly' ways of knowing,' a concept articulated by Nigel

Cross (2011). Consequently, the design field and its practitioners were seen as uniquely equipped to address the dynamic challenges of modern life and its most 'wicked' problems (Buchanan, 1992).

This transformation expanded the impact of design in both private and public sectors and significantly enhanced the roles of designers. Designers became key in solving problems and shaping problem spaces through their ability to navigate complex systems, develop new patterns, and devise their own strategies for solutions and interventions. Their job entailed seeing what others overlooked, transforming mystery into actionable strategies, advocating for exploration, and justifying their approaches (Martin, 2009). Designers had to master various methods, dynamically evaluate, and adjust these approaches, and innovate new ones suited to specific contexts. This involved a deep understanding of their tools and the capability to guide others and envision new possibilities (Askland et al., 2010; Martin, 2009; Cross, 2011). Creativity was vital for this work, using imagination or original ideas to produce something of value (Runco & Jaeger, 2012). Where design went, creativity inherently followed.

> **"A new designer is someone who can think in systems and speak in stories. Sketch complex ideas in multiple formats yet capture contributors' ideas with empathy. Someone who can draw on many design skills but lend their attention to serve the team and guide its learnings to discovery and tangible outcomes. Hold images of the future in focus while working with mixed stakeholder teams to map system interaction details."**
>
> **~ Peter Jones & Krystal Van Ael, Design Journeys Through Complex Systems**

Perin Ruttonsha (2016) described the field of design as unavoidably systemic and perpetually under renovation, noting the extrapolation of design thinking as a catalyst for its rapid expansion and, importantly, distinguishing the shift of design roles from traditional craftspeople, engineers, or artists to strategic problem solvers and change-makers.

Designers pivoted to tackle vast, open-ended tasks—starkly contrasting traditional design work's well-defined briefs, precise timelines, and fixed budgets. Their new 'business as usual' involved significant projects such as redesigning outdated societal systems, transforming cityscapes, humanizing technology, and shifting from linear to circular economies (Brown, 2019, p. 251). Rethinking and reinvigorating creativity would be essential to navigate these challenges, providing a strategic approach to translating these broad tasks into actionable plans.

CREATIVITY VIA DESIGN THINKING

Design thinking originated as a distinct methodology within the broader design field. The theoretical foundation of design thinking equipped practitioners with tools to understand, observe, predict, and facilitate both incremental and radical forms of creativity and innovation (von Thienen et al., 2018). Its formal adoption into corporate settings and academia was significantly propelled by organizations like IDEO and educational institutions such as Stanford University's d. School, which championed design thinking as a method to demystify and manage the abstract nature of creativity. Design thinking became essential in business and educational frameworks by transforming creativity into systematic, repeatable, and understandable processes (Rhea 2003, Dorst, 2011). It is now recognized as a core capability in management training and is a cornerstone in modern business schools, consultancies, and higher education curriculums (Brem et al., 2016; Keeley, 2013; Martin, 2009). While design thinking is not a substitute for design and represents a shift in values within the field, its desirability has led to fusions and confusion around understanding design (Lockwood, 2010). This concept is often used interchangeably with design in literature, a point that will be explored in more detail in the next section.

BACKGROUND LITERATURE

> **"Take the term creativity, and say that to a designer, to an artist, to an entrepreneur, to a lay person, to a nurse, and they'll all have a perspective on it, and there will be a truth in their perspective. But if you lined them up against each other, they would probably all be very different."**
>
> **~ Participant Twenty-Three**

Many definitions of creativity exist. In this project, creativity was considered as the production of novel ideas that were useful and appropriate to the situation (Amabile, 1988; Sternberg, 1999; Unsworth, 2001). Its three ingredients of novelty (Runco & Jaeger, 2012), usefulness (Kaufman & Beghetto, 2009), and appropriateness (Amabile, 2014) were common among other definitions of creativity. Based on the literature review, this product-oriented definition seemed to be mostly agreed upon by researchers across other disciplines like organizational psychology, management, and engineering and suitable to the design field. Creativity was generally viewed as processes related to generating new ideas, realizing them, and considering practicality and applicability to a domain or context. This interpretation of creativity required both internal thought processes and the external expression and refinement of these ideas, balancing both elements depending on the context.

TYPES OF CREATIVITY

The concepts of 'free creativity' and 'applied creativity' emerged from efforts to categorize creativity's expressions across different contexts (Amabile, 1996), which can be interpreted in design tasks as 'structured' and 'unstructured' creativity. Free creativity was often linked with the arts and personal exploration, characterized by a self-motivated creation process where the experience was the primary reward. This open-ended form of creativity valued personal expression over concrete outcomes (Sternberg, 1999). In contrast, applied creativity was pragmatic and commonly observed in business or technical fields, with creative activities to achieve specific goals or solve definitive problems.

Educational and professional frameworks have differentiated between these forms, shaping curricula and development programs to either foster personal creative growth or to impart skills for creative problem-solving. Both dimensions of creativity informed the development of the activity in this research. These distinctions, while academic, also impact how the purpose and value of creative work are perceived in society: free creativity, at times, might be viewed as lacking discipline or practicality, whereas applied creativity could be seen as too commercially focused, potentially overlooking the authentic or innovative elements of the creative process. Both versions are important to this project, in understanding the creative contributions from participants.

DEFINING DESIGN

Understanding design could be its own project. Put simply, when thinking about what design does, it could be described as an engagement with conceptualization, communication, and propositions of new realities (Askland et al., 2010). Perhaps it is more recently set apart from art practice by emphasizing appropriate and influential solutions, though I suspect some artists and craftspeople might disagree. Where design effort is applied is often characterized by traditional disciplines like architecture, graphic and visual design, industrial design, and emerging disciplines, including design for experience, service, innovation, transformation, sustainability, or futures (Sanders & Stappers, 2012).

Given design's broad applications, some distinctions can be helpful. "D" design typically refers to professional practices requiring specialized skills and expertise which link with traditional and emerging design disciplines in this work. "d" design can be broadly applied to design principles and methods, like design thinking, creative problem-solving, and developing products irrespective of formal training or professional status (Nelson & Stolterman, 2012; Lockwood, 2010; Cross, 2011). Both groups and versions are represented in this project.

UNDERSTANDING CREATIVITY THROUGH THEORY

Below are selected concepts that informed the research design or are helpful to understanding the project. My takeaways from spending time in a broad creative literature space included the many definitions of creativity that were often context-dependent, interpretations varied widely, and types of creativity differed based on the engagement involved. The demonstrable diversity, incompleteness, and inconsistency between and within various theories of creativity (McLaughlin, 1993) were noted. With that in mind, my intent was not to define or locate 'a definition' but to establish a basis for meaningful discussion of creativity (Gotz,1981) in this work. Creativity has been widely studied and debated, drawing on decades of research across various fields (Unsworth, 2012; Sternberg, 2016). The selected references below are not exhaustive but helpful to this project.

Models of the Creative Process

The Convivial Toolbox provided two models of creativity that were instrumental in understanding and informing the development of this work's research design. The first was a framework for individual creativity, illustrated in Figure 4, constructed to encompass 'the bits' of creativity— the many layers of context related to individual creativity. It represented the mind, focusing on the cognitive aspect that many theories of creativity center upon, the heart, which involves emotion, and the body, evoked through activity and motion. The last layer depicted creativity in the environment, shaped by places, spaces, props, and materials (Sanders & Stappers, 2020, p.41)

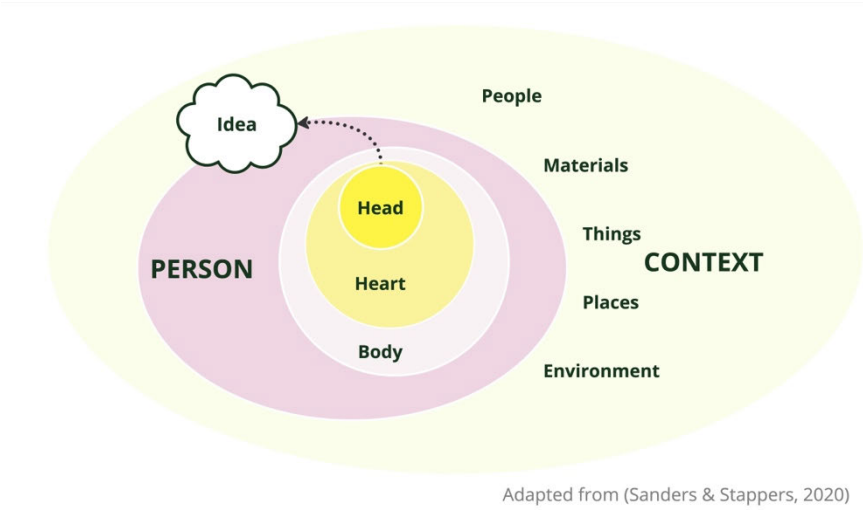


Figure 4 Visualizing individual creativity.

Creative Process Theory

The second model presented in The Convivial Toolbox was Graham Wallas's creative process theory, outlined in his 1926 book *The Art of Thought (Sanders & Stappers, 2020, p.50)*. Wallas identified five stages of the creative process, illustrating that creativity unfolds over time. He delineated these stages to highlight the cognitive and emotional phases involved in engaging with creativity:

1. Preparation is the work of focusing one's mind on a problem or area of interest.
2. Incubation or the internalization of a problem.
3. The intimation is connected to a feeling that something is on the way.
4. Illumination, also referred to as a spark, when an idea bursts into conscious awareness.
5. Verification of the idea, which can then be elaborated and applied.

The process delineated by Graham Wallas was also significant in examining design theory and the intersection between design and creativity theory. Although some design thinking methods and models resemble those of creativity, they often notably omit the incubation stage and typically lack acknowledgement of the emotional aspects of creativity, surfacing the distinct difference in how design and creativity are theoretically modelled and practically applied (Brem et al. 2016).

The Four-C Model of Creativity

The Four-C model of creativity depicted in Figure 5, proposed by Kaufman & Beghetto (2009), categorized creative achievement into four levels. These ranged from 'mini-c,' which included everyday problem-solving and insights meaningful only to the creator, to 'little-c,' involving novel solutions significant to learning. 'Pro-c' represented professional-level expertise, while 'Big-C' denoted eminent, groundbreaking contributions that were innovative and impactful to humanity. This model is helpful in understanding how creativity manifests and develops across different scopes and stages of a person's life or career.

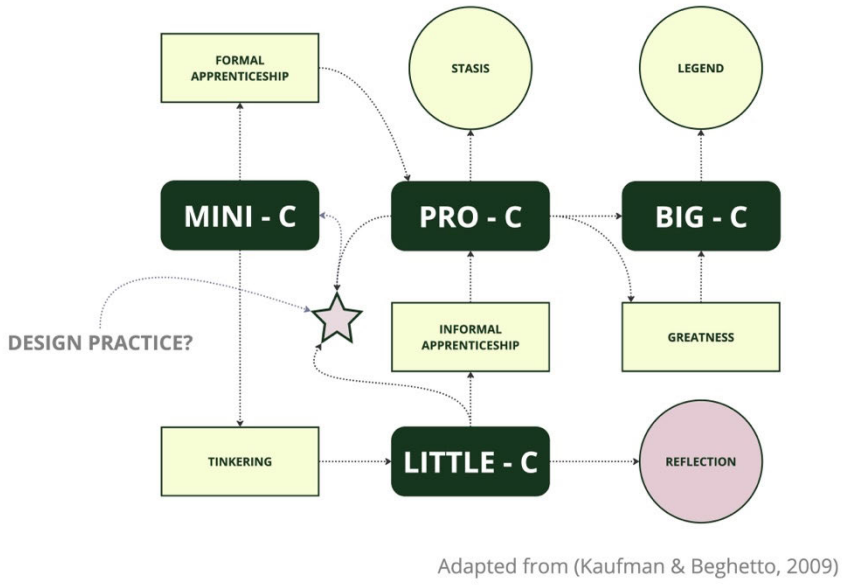


Figure 5 The Four-C Model of Creativity. (Adapted)

The Triangular Theory of Creativity

The Triangular Theory of Creativity (2016), represented in Figure 6, is a new theory for understanding individual creativity and a recent addition to Robert Sternberg's abundant creativity research, expanding on and connecting to previous theories to understand personal attributes and contributions of creativity. In this theory, creativity arises from three forms of defiance: defying the crowd, oneself, and the Zeitgeist (Sternberg, 2016). Each type of defiance challenges different aspects of the conventional and the accepted, whether societal norms, personal beliefs, or deep-seated, often unconscious, cultural assumptions. By proposing that creativity involves defiance against multiple levels of accepted norms and beliefs, the theory underscores the complexity and multifaceted nature of creative thinking and innovation. The use identifies three types of defiance—defiance of the crowd, the individual, and the Zeitgeist—that combine to create seven different combinations and manifestations of creativity.

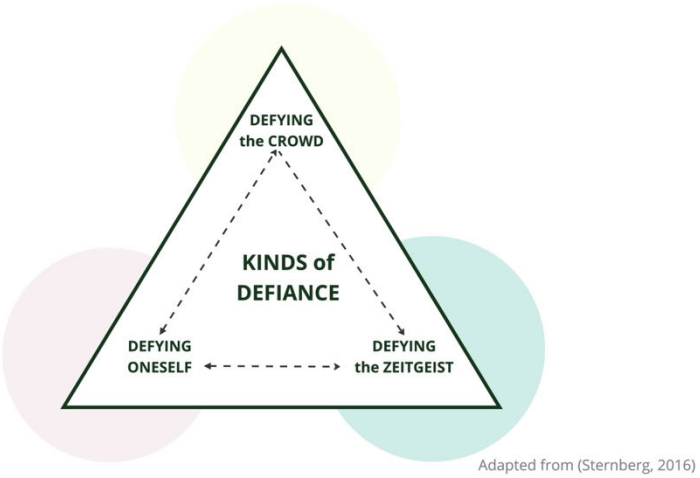


Figure 6 The Triangular Theory of Creativity. (Adapted)

Generational Conceptions of Creativity

The model of generational concepts of creativity (see Figure 7) developed by Erica McWilliams and colleagues (2009) is useful for understanding changing conceptions of creativity. Developed from a pedagogical perspective to develop effective teaching and learning strategies that foster a creative capacity, it applies to considering design paradigms about creativity design education and experiences and interpreting the ways creativity could unfold in the primary research. The first generation viewed creativity as spontaneous, singular, and arts-based. In contrast, the second generation sees it as teachable, assessable, and essential across various disciplines, making it a key driver in social and economic contexts. This model identifies creativity in traditional views linked to artistic talent and individual genius and more recent views of creativity as an economically valuable, team-oriented, observable and learnable concept (McWilliam, 2009).

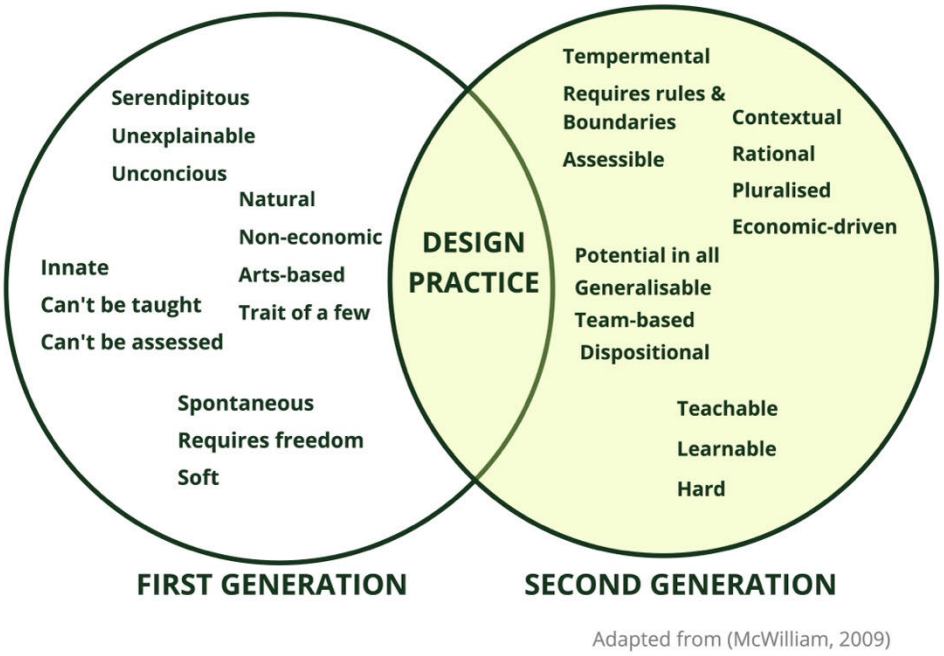


Figure 7 Generational Concepts of Creativity. (Adapted)

The generational concepts models help us understand the adaptations and refinements of the concept of creativity. It focuses on the shifts in creative processes and outputs due to the varying socio-cultural and technological influences experienced by each generation.

Matrix of Creativity Types

Kerry Unsworth (2001), in *Unpacking Creativity*, developed a matrix of creativity types based on two critical dimensions: the driver type (*Why engage?)* and the problem type (What is the initial state of the trigger?). Each dimension spanned internal to external motivation and closed-to-open problems, which are prevalent in design tasks, making it a particularly relevant framework aiding in understanding the types of creativity that may emerge in research. Unsworth identified four distinct types of creativity: responsive, expected, contributory, and proactive, summarized below:

1. **Responsive Creativity**: Occurring when individuals are externally driven to solve closed problems, that are presented to them. The individual has little control over the problem or the process. This type of creativity is the focus of the organization and traditional creativity studies (Amabile, 1996). Example: An architect following precise specifications in a design to meet building code.

2. **Expected Creativity:** Engaging in creative activity comes from outside influences, such as a job requirement, a competition theme, or an organizational goal, though the specific problem or challenge is open-ended. Example: Students in a graduate design program are assigned to develop an innovative product for sustainable living. However, each student self-discovers the specific sustainability issue to address.

3. **Contributory Creativity:** Occurring by internally driven efforts to solve specified (closed) problems, often on a voluntary basis, while supporting organizational innovation through initiative. Example: Employees identify a more efficient process or workflow within their job scope.

4. **Proactive Creativity:** The least researched area, where individuals are internally motivated to identify and solve self-discovered open problems. This version is crucial for significant innovation but is challenging to manage and measure within traditional structures **Example:** A professional web designer notices that local nonprofits have outdated websites, so they proactively volunteer to redesign these sites.

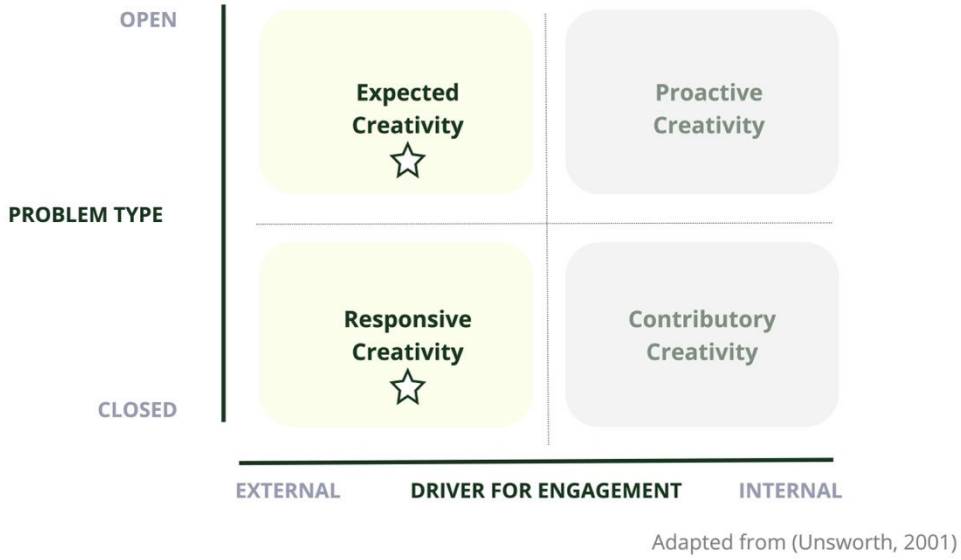


Figure 8 Matrix of Creativity Types. (Adapted)

Both expected and responsive creativity types are commonly found in design engagements. Both are explored in this project.

UNDERSTANDING CREATIVITY THROUGH DESIGN

> **"We believe that design must move beyond its traditional boundaries, from its private club status, so that it can become a school of thought that can solve the world's most pressing problems. Design thinking can help professionals solve problems in innovative ways."**
> **~ Clarke & Smith, 2010**

DESIGN & DESIGN THINKING

Design thinking is a problem-solving approach that emphasized user-centricity, creativity, and iterative learning to tackle complex problems. Once celebrated as a groundbreaking innovation method, it has

faced recent criticism in the wake of significant layoffs (Wilson, 2023) from the global design and consulting firm IDEO, which played a pivotal role in popularizing and shaping the concept of design thinking. In his critical examination 'What Just Happened to Design Thinking?' Nigel Cross highlighted a contemporary crisis within design thinking, questioning its adaptability and depth in addressing the nuanced challenges of today's world while pulling apart its interpretations leading up to this juncture. Criticism from a traditional design lens has included ambiguous definitions, overreliance on anecdotal support, and being perceived as common sense marketed at a high price (Jen, 2017). Another view suggested that design thinking was fundamentally conservative, preserving the status quo by prioritizing the designer's viewpoint over all else (Iskander, 2018).

In social contexts, the nuanced distinctions between ‘D’ design as a discipline and 'little d' design like design thinking methods, diminish, simplifying the concept to where design is merely design, and creativity can lead to both beneficial and detrimental outcomes. A key challenge lies in the methods used; they provide systematic approaches but lack inherent ethical guidelines. This absence of built-in ethics, and as I posit, built-in creativity, means that while design methods can effectively structure problem-solving and innovation, they do not automatically address the broader moral and social implications of their application in diverse public contexts.

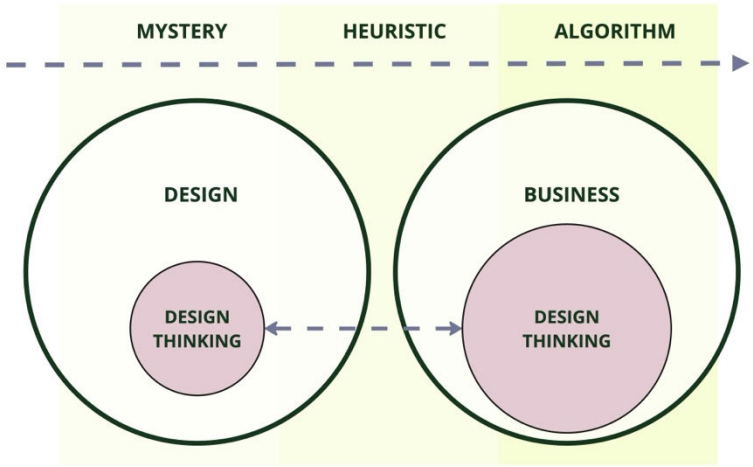


Figure 9 Design & Design Thinking in Business Contexts.

Supposing the popularity of Design Thinking and conflation of “D” design and “d” design in business and innovation contexts.

In The Design of Business (2009), Roger Martin characterized the role of the designer as a person who could move concepts from mystery to heuristic to algorithm (repeatable, programmable processes), referred to as *The Knowledge Funnel* (pg.8). To harness this ability would be to add significant value to an organization, and ‘thinking like a designer’ with the power of design thinking was a way to do this. This is one of many books and thought pieces (Brown, 2009; Rhea, 2016; IDEO, 2018; Dorst, 2011; Cross, 2011; Clark & Smith, 2010, and many more) about the strategic benefit of design thinking, catapulting its popularity into business and academic spaces. As a result, the discipline of design and methodology of design thinking became inextricably linked and often conflated. Figure 9 represents a view where design thinking from the perspective of “D” design is a tool in the toolbox, contrasted with the perspective of business where “d” design has a larger role and, in many cases, represents “D” design.

Ironically, design as a concept has moved through *The Knowledge Funnel*, demystifying the tools, and thinking of “D” design, perhaps not as anticipated.

METHODS & TECHNIQUES

Thinking about methods and techniques in the context of the theme's creativity and design presented an interesting and perhaps useful observation. While there are several design methods and creativity techniques, there are fewer creativity methods, and design techniques abound. Some research at this intersection suggested the value of developing creative methods grounded in a thorough understanding of design practice (Biskjaer et al., 2017). The terms "method" and "technique" are often used interchangeably, though "method" typically suggests a structured approach aimed at replicability, while "technique" might imply more flexibility to encourage exploration. Focusing on the repeatable instead of the applicable might be a gap. There are many resources for art techniques, like Julia Cameron’s *The Artist’s Way* written in a self-directed style to improve creativity. Typically, people look to the creative industries or art worlds for guidance on creativity. Still, these often miss domain relevance when it comes to design specifics.

VALUE OF CONSTRAINTS

Constraints shape creativity by setting clear boundaries and criteria, paradoxically enhancing innovation by focusing efforts and streamlining the design process. Although they may seem restrictive, constraints often spur creative solutions and narrow scopes that might otherwise be overwhelming. Designers frequently operate within the confines of constraints set by their clients, guided by the goals, abilities, and desires of the users of their products and systems. These constraints can facilitate and enhance their creative processes—imagining, modelling, evaluating, and developing ideas for proposals (Nigel Cross, 2011).

Morgan and Barden (2015) argued that constraints are more a matter of perspective, seeing them as limitations or opportunities. They highlighted the prevalent 'do more with less' dynamic at the intersection of scarcity and abundance, underscoring the transformative potential of constraints in fostering creativity amid both abundant possibilities and real scarcities (pp. 14, 205).

CREATIVE OUTPUTS

Outputs are often the primary indicators of creativity in design practice. A product-oriented approach allows for objective evaluation based on the innovation and usefulness of the final output. This approach aligns with the widely accepted definition of creativity as being original, useful, and appropriate to its context, particularly within business and innovation circles. However, prioritizing outputs over the creative process can lead to a narrow focus that may neglect the developmental stages where much of the creative thinking occurs. Similarly, while focusing solely on creative products can detach creativity from its practical applications, an excessive emphasis on outcomes can also overlook other crucial aspects of design. When only successfully implemented ideas are studied or assessed, the creative potential of unfinished ideas remains unknown. This selection bias toward successful outcomes can limit our understanding of the full spectrum of creativity, missing insights into why some ideas fail (Unsworth, 2001).

RESEARCH GAPS

Although creativity is often considered a focus of design activity (Han et al., 2019, IDEO U, 2018), the dynamics of creativity and design remained surprisingly underexplored, with limited disciplinary literature and discussion, particularly from the perspective of designers themselves (Askland et al., 2010). Attending the interdependencies of creativity and design through research is valuable to both fields to help bridge these gaps.

> **"The question of what creativity is in relation to design remains vague. Is it, for example, a quality of particular products, or the outcome of certain processes? Is it the result of rigorous problem-solving or of play and improvisation? Is it a matter of objectivity or is it subject to interpretation?"**
>
> **~ Askland et al., 2010**

An activity participant shared this analogy that I thought worked quite well in thinking about the complexity of creativity and design. All their components are like species in an ecosystem—while it is uncertain if they will merge, they form a dynamic network. This work might help find a few species or network connections that were not noticed before.

TAKING STOCK

So far, this exploration has covered creativity and design across broad social, technological, and economic contexts, using historical and contemporary examples. It raised the significance of creativity to design practice, shedding light on our interest in creativity and its connection to design. Both design and creativity were situated in the project alongside relevant theoretical frameworks and observations from the literature, acknowledging the limitations of exploring two massive information territories. The principle that 'all models are wrong, but some are useful' stood to reason.

The confusion and interconnection between 'design' and 'design thinking,' as well as 'creativity' and 'innovation', were acknowledged as these dynamics play out in the research. A reoccurring tension from the literature was borrowing creative concepts from allied fields, which often overlooked key elements and focused on outcomes rather than processes. With this information in mind, I developed a research plan. The next section details my approach.

Part Two :

Convivial Methodology

PART TWO: CONVIVIAL METHODOLOGY

Plenty of creativity research indicated that all people have creative capacity and varying degrees of ability (Gauntlett, 2023). Given that many people are designers or use can use design methods, it was assumed that creativity existed in design practices and, therefore, could be located. The research aimed to externalize its implicitness through an exploratory and interpretivist (Creswell & Creswell, 2023, p.6) approach. Considering the gaps in existing literature identified in the previous chapter, centering practitioners' perspectives was essential. Talking with the broader design community made sense for a view of creativity constrained by professional design contexts. Generative design research methods aided in exploring the experiences of individual creativity through a participatory activity. Information from talking, making, and reflecting while paying attention to the basic principles of bringing about creativity noted in the literature would help uncover creativity experiences. The following questions guided the research design and subsequent exploration:

- How does creativity happen in design practice?
    - Does creativity spark, or is there a way to think creatively?
    - What theories, principles, methods, practices, or experiences do designers employ to inspire or initiate creativity?

Organizing how to bring together data became the center point of this work. To move from the obscurity and implicitness of creativity, different methods had to be considered to access what can be a slippery thing to think about, let alone express.

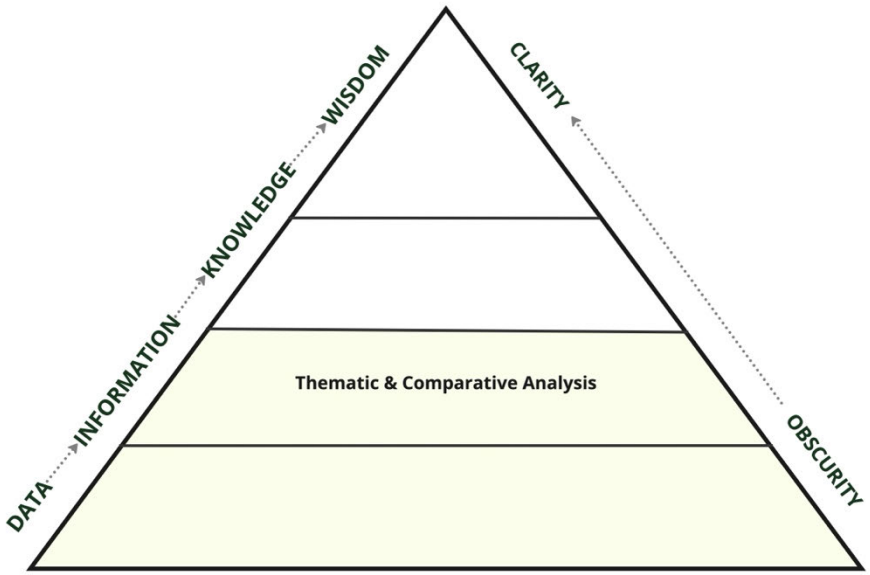


Figure 10 The DIKW model, emphasizing Data & Information.

DESIGN RESEARCH

The design-led research approach in this project offered a departure from the traditional research-led perspective (Sanders, 2008) dominant in creativity research. This newer, design-oriented approach provided a fresh perspective for exploration, potentially yielding insights beyond what conventional research methods might achieve (Sanders & Stappers, 2020, p.20). The value of design-led research is in regarding individuals as the true experts in domains like life, education, work, and, in this project, creativity. Underlined is the belief that all individuals have valuable contributions to offer in the design process, and they can demonstrate both articulateness and creativity if given the right tools for expression (Sanders, 2002). Additionally, employing creativity-aware techniques to explore the subject of creativity introduced an intriguing, slightly ironic meta-approach to the research. The tools utilized for exploration reflect the subject under study, enriching the investigation and potentially enhancing the comprehension of creativity within the design research framework.

Central to setting up this research was figuring out how to engage with the theme of creativity through the experiences of design practitioners. Generative design research methodology offered a pathway to do this by combining qualitative methods (Creswell & Creswell, 2023) and participatory methods, which I interpreted broadly to represent activities that involved participants in producing research data (Fathallah, 2021). The use of interviews and a method called *Do, Say, Make* (Sanders & Stappers, 2020) engaged participants in discussions and reflections on creativity to help me understand their perspectives (See Figure 11).

METHODS

The *Do, Say, Make* method by Sanders and Stappers (2020) provided the necessary depth of discovery to uncover the sometimes-imperceptible qualities of creativity, which could be difficult for some to think about, let alone describe (pp. 66-69). Pictured in Figure 11, *Do*, *Say*, and *Make* are three complementary and reinforcing phases to better understand what people do and use, say and think, and know, feel, and dream, respectively, and creating space to access levels of knowledge, from the explicit and observable to the implicit and latent (Sanders & Stappers, 2020). In this project, *Make*, *Do*, *Say* offered a foundational structure for exploration. Choosing a make process to get into creativity in situ would bring about nuances of creativity that may not be spoken about or recalled by just talking. The activity indirectly explored 'expected creativity,' mentioned in chapter two: creativity driven by external factors and is open-ended, offering the designer autonomy over the problem framing or the process (Unsworth, 2011).

Reordering the phases, starting with the *Make* phase, catalyzed participants' engagement with their creativity. It set the stage for considering and documenting how creativity happened in the *Do* and *Say* phases. Here is an overview of how each phase was constructed:

1. **Make:** Engaging in an open-ended creative activity that involved making something and, through that exercise, expressing thoughts and feelings about creativity.
2. **Do:** Self-aware and reflective practice using reflective prompts to identify and articulate observations of feelings, behaviours, and strategies as they moved through the activity.
3. **Say:** Post-activity and reflection interview, in which participants shared and discussed their views and discoveries.

The '*Make, Do, Say'* method (See Figure 11) adapted from the Convivial Toolbox's *Do, Say, Make* facilitated the exploration of various levels of knowledge, ranging from explicit to deeper latent knowledge, through different engagements with the subject of creativity (Sanders & Stappers, 2020, p. 67).

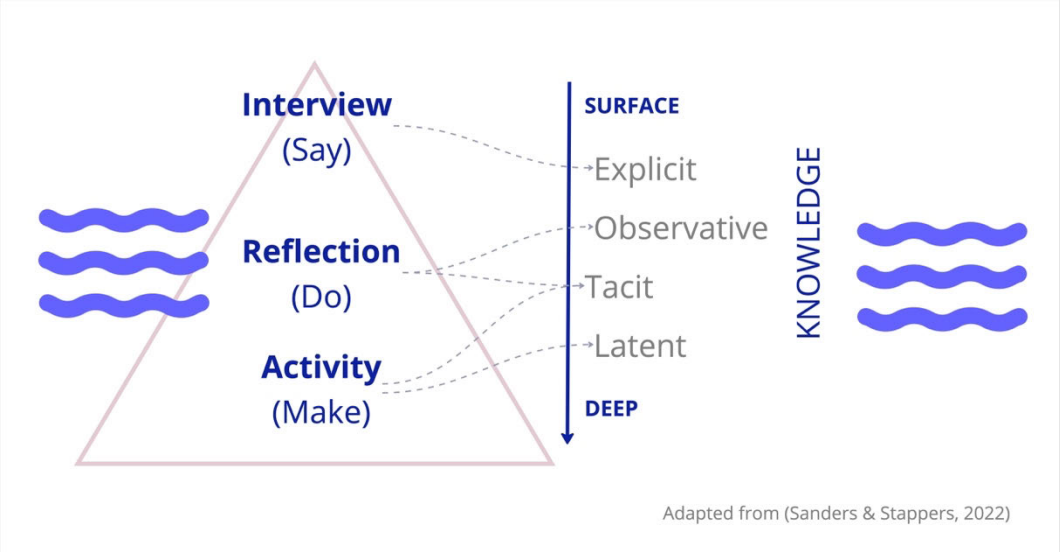


Figure 11 The 'Make, Do, Say' method from 'Do, Say, Make'. (Adapted)

SEMI-STRUCTURED INTERVIEWS

The interviews indirectly explored 'responsive creativity,' which is mentioned in chapter two: creativity driven by external factors, with the designer having little control over the problem or the process (Unsworth, 2011), a common constraint in professional design engagements. 75-minute online interviews, guided by semi-structured questions, were conducted to discuss creativity in the context of professional design practice. The interview structure followed the approach of influential creativity researcher Mihaly Csikszentmihalyi (1996), which prioritized natural conversation over strict question order or wording to create conditions for genuine and reflective answers and opportunities for tangents, where exchanges could occur around themes of interest (p.16). Findings from how practitioners talked about and experienced creativity in their roles were then contrasted with findings from the participant activity to identify patterns.

USES OF LITERATURE

This project's literature encompassed academic papers, journals, books, news articles, podcasts, blogs, social media, and videos, as well as strategic foresight, and innovation course material. Two literature reviews were conducted: one at the project's outset to contextualize the research space (see Figure 12), gain a comprehensive understanding of how creativity was discussed and studied, establish a solid theoretical foundation, and identify areas of opportunity for new insights. As the study unfolded, a second literature review was conducted to refine and validate the insights from the participant activity and interviews. This step, tailored to the exploratory nature of the research, involved revisiting the literature not as an initial guide but to compare and contextualize newly identified patterns and categories. This highly iterative approach helped bridge findings with potential future design directions (Creswell & Creswell, 2017, p.30).

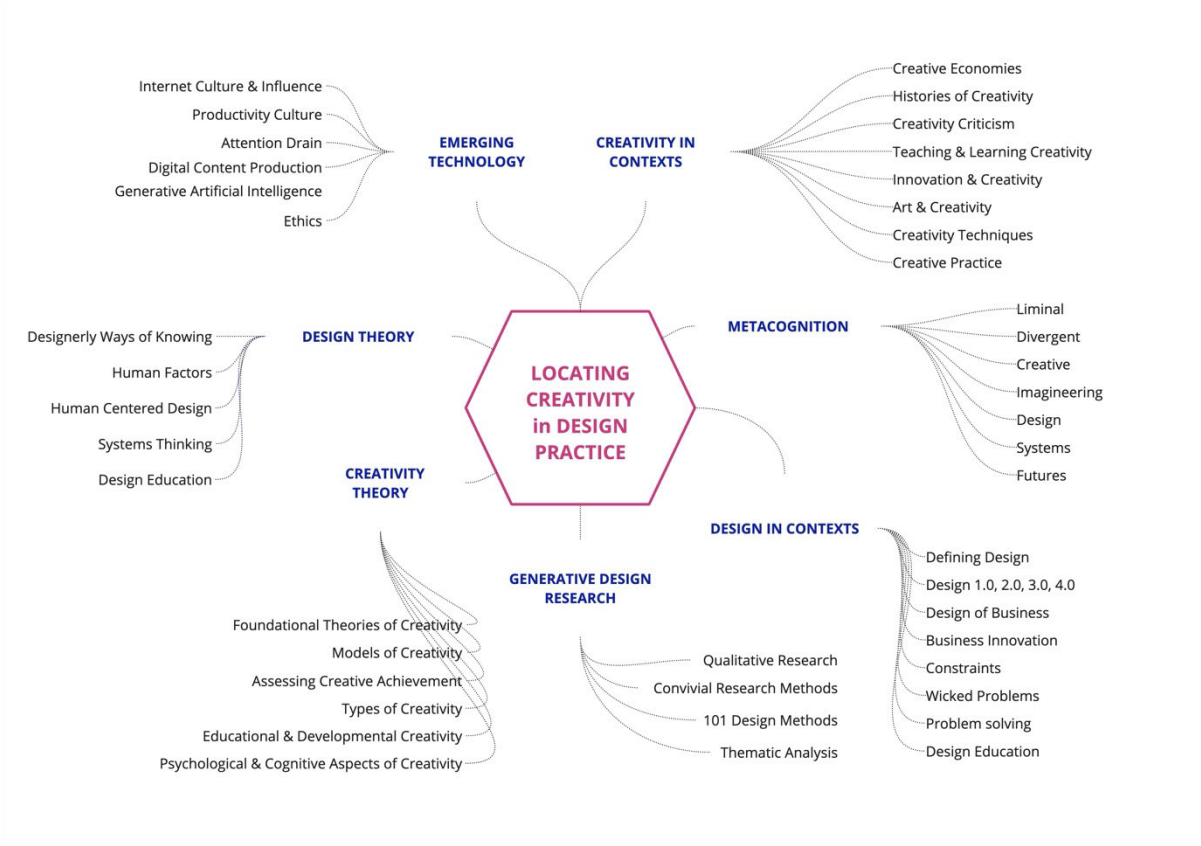


Figure 12 Project literature map.

A high-level view of the literature referred to in this project is organized into key categories and subcategories of information.

PRIMARY RESEARCH

Research activities occurred in virtual and physical spaces in Toronto, Ontario, Canada. Two groups of participants, counting twenty-three people, contributed to this research. Nine people participated in the creative activity, offering insights into the experiences of creativity. Fourteen people participated in interviews as subject matter experts to talk about creativity and share perspectives from the field. Interviews were conducted from November 2023 through the first two weeks of January 2024. Concurrently, the activity ran from the first week of November 2023 until the end of December. I had hoped for ten people for each group, but the sampling aligns with the recommended sizes of 20-30 people for interviews and 2-6 for phenomenological research (Creswell & Creswell, 2017, pg.198). Given the bread of design disciplines discussed in the first chapter, the variety of experience offered by available interview participants warranted exceeding the goal of ten interviews.

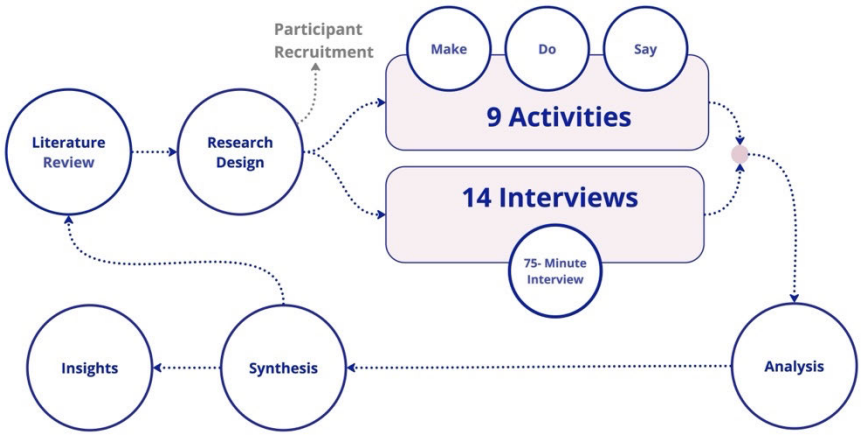


Figure 13 A process diagram of the research design.

ABOUT THE PARTICIPANTS

All participants were design practitioners operating within traditional and emerging design disciplines across public and private sectors and varying industries. Shared traits among both interview and activity groups included professional design experience and differing perspectives on the significance of creativity in their work. Nine participants were connected to OCAD University as alumni or current students of Digital Futures, Industrial Design, and Strategic Foresight and Innovation (SFI) programs. Among them, three were my SFI classmates, and two were from my personal network. Efforts went to prioritizing participation from people I had not worked with while being open to representation from as many areas of design as possible.

ACTIVITY PARTICIPANTS

The activity group included people originally from Canada, the U.S.A., and Ecuador with five or more years of experience in design, business, education, architecture, government, consulting, and engineering fields. Their role descriptions included librarian, studio technologist, engineer, design researcher, design director, architectural director, designer, sr. technical advisor for applied design, coordinator, graduate student, and strategist. Interested people responded to my open participation call via LinkedIn and word-of-mouth. Prospective participants were screened using a questionnaire that considered their relationship to design, training, experience, views on creativity, availability, and interest in the project.

INTERVIEW PARTICIPANTS

The interview group included people from Canada and Ireland with 10 to over 30 years of experience in graphic design, management consulting, research, professional services, education, healthcare, arts, marketing and advertising, engineering, and technology. Their role descriptions included academic, adjunct professor, design researcher or strategist, ethics researcher, brand strategist, innovation consultant, artist, executive advisor, CEO, design director, founder, graphic designer, science fiction writer, and prop stylist. Subject matter experts were identified through public sources and referrals and

were directly invited to participate in an interview. I chose a direct-to-expert approach to facilitate the involvement of people outside of my immediate network.

THE ACTIVITY EXPERIENCE

The participant activity "The Secret Lives of Things" was inspired by a paper by Henry Mainsah (2022) exploring creative pedagogies for research methods, which aligned with my interest in exploring creativity through creative-aware methods. The activity brief and reflective prompts were sent to participants by email, along with an invitation to an optional kick-off meeting to field any questions. Emphasized in the brief was an open-ended question for participants to bring to a point of resolution, the shape of which was up to them. The design approach, medium(s), and time spent within an 8-week window were up to them. Completed activities included artifacts submitted digitally in various formats—visual, audio, text, and video—enhancing the richness of the data collected.

Based on Wallis's creativity model discussed in chapter two, Reflective prompts were provided to help participants document and reflect on their creative processes during the activity. Reflections were shared as text documents, handwritten notes, audio recordings, or a mix and helped inform the content of a 60-minute follow-post-activity interview to explore the creative experiences more deeply.

While a minimum effort of four hours across about two weeks was recommended for the three parts, activity, reflection, and follow-up interview, most utilized the full eight weeks and committed more than the suggested hours.

ANALYSIS

Key themes emerged from the activity and interview data analysis, shaping some of the interpretations found in Chapter Four. This analysis also laid the groundwork for an expanded literature review and introduced theoretical frameworks for comparison, fostering new avenues for analysis and future research. Initially, transcripts from interviews, activity reflections, and post-activity interviews were subjected to inductive coding and thematic analysis, with cross-referencing used as needed for comparisons (Creswell & Creswell, 2023, pp. 15-194). Focusing on the research question of how creativity happens in design in practice, my approach was to stay close to the data, which involved a highly iterative process of reviewing the data multiple times.

Emergent shared themes and relationships between participant groups influenced a shift to abductive coding to incorporate established frameworks, specifically Sternberg's *Triangular Theory of Creativity* (1996) and Kaufman and Beghetto's *Four-C model of Creativity (2009)*. The research organically prompted connections and insights that could improve, validate, or suggest changes to existing theories. Data triangulation involved multiple data sources, methods, and theoretical perspectives to ensure the validity of the findings. Viewpoints contradicting the main themes were also considered and included, as recommended by Creswell & Creswell (2023, p. 213).

LIMITATIONS

Research Approach:

- The research topic of creativity was openly disclosed to all participants.
- The participant activity required more than triple the time commitment of interview participants, impacting recruitment and making more people available for interviews.

Data Collection:

- Activity participants occasionally skipped steps, leading to inconsistencies in the data collected.

Participants:

- Participants who did not value creativity were underrepresented in the sampling.

Analysis:

- Managing the 'messy data' proved challenging for one person, especially with the added complexity of multiple communication methods, including recorded video and audio, written, and visual contributions.
- Resource and time constraints challenged member checking, which was conducted informally and with gaps.

Constraints:

- Balancing the exploratory nature of the project with the structured linear progression of research was challenging, leading to frequent iterations and clarifications of objectives.
- This research was conducted over four months while balancing employment. Time and resources at times were limited.
- My close involvement in the design space could be problematic due to developed bias.

OBSERVATIONS FROM THE FIELD

Generative design research methods offered rich and deep insights and fostered a relational interaction between the researcher and participants. Experience and connections to creativity within their personal and professional contexts, broadening the research's impact Much of the activity group indicated creativity was highly valuable to design practice. This makes sense, given that they offered personal time to participate in the creative activity. Many in the interview group valued creativity, some saw it as a bonus, and a few from the consulting and engineering spheres felt certain forms of creativity were useful or not essential to design practice. Expanding beyond the focus on creativity within design practice, several intriguing observations and themes emerged and are depicted below as provocations for future research.

CREATIVITY AWARENESS-RAISING

Participants mentioned that pondering and attempting to explain the inexplicable was a valuable thinking and talking exercise.

> *"I love talking about this stuff. I don't get a chance to talk about creativity enough. People ask me how to be creative at work, and I try to answer, but I don't think I have managed to get an answer that satisfies anyone, including myself."*
> *~ Participant Twenty-One*

After the research concluded, some participants reached out to share ongoing thoughts about the experience and connections to creativity within their personal and professional contexts. Many of the

activity participants commented that the combination of reflective prompts with creative acts offered grounding in moments of friction and clarity in personal creative processes.

> *"Great exercise to reflect for myself on how internal my processes are."*
> *~ Participant Seven*

The findings indicated that while methods aimed at fostering creativity are beneficial, they also prompted considerations of creative identity and accessibility. Reflections acted as a facilitator of sorts to bring attention to qualities of creativity that otherwise may have been overlooked.

> *"I feel like I had some resolution that I probably wouldn't have experienced if I hadn't been part of your research. The self-exploration has been great and will impact how I move forward with what it is that I'm trying to solve."*
> *~ Participant Nine*

Professional design facilitators spoke to their hidden role in getting people to a place of comfort to explore and express creativity before a design sprint or session could even happen. Exploring creativity awareness and the potential need for facilitation to help individuals recognize their creative abilities in relevant contexts present interesting territory for further research. Given the prevalence of implied creativity in design, and despite the abundance of design frameworks and creative techniques, creativity is often left hidden or open to interpretation, leaving the potential to be overlooked or underutilized. While design methods and creativity held value, additional support could have profoundly impacted the understanding and utilization of creative potential. This notion could be especially beneficial in education, where fostering creativity was crucial but challenging to teach effectively.

ON GENERATIVE METHODS

The exploratory approach using generative design research methods cultivated rich insights. It produced a large and interesting data set beyond the project's scope, making it difficult to set aside the opportunity to paint a broad picture of creativity. This situation highlighted a challenge in academic research: the need to define the purpose, use, and potential outcomes of the study early on, adding administrative barriers to exploring unexpected findings without running up against time constraints.

A latent benefit of the *Do Say Make* technique is its timeline capability. This research focused decidedly on the present day without accounting for past or futures exploration. An unintended outcome was the surfacing of past experiences and hints at desired futures through participant reflections and discussions. Most participants referenced examples of their childhood and educational experiences of creativity, artistic or technical abilities and creative hobbies (or regretful lack thereof), fulfillment from creative acts, and, for some, the necessity of creativity for well-being. More than half made known a desire for imaginative and exploratory opportunities, sharing ideas about how their creativity is applied or valued and what might change. Some wanted opportunities to explore their creativity without being tied to productivity or purpose.

"I love the idea of doing something that doesn't have a purpose. I don't think that happens often anymore. So, I appreciate this opportunity to be introspective and create something."
~ Participant Two

THE PATH OF EXPRESSION

Incorporating a timeline of experience using the Path of Expression (Sanders & Stappers, 2020, p.75). The blue circle represents the intent of the project to explore present-day experiences. The pink circle represents what happened, glimpses of the past and the future, occurring organically through the Say, Do, Make method (Sanders & Stappers, 2020, p.67).

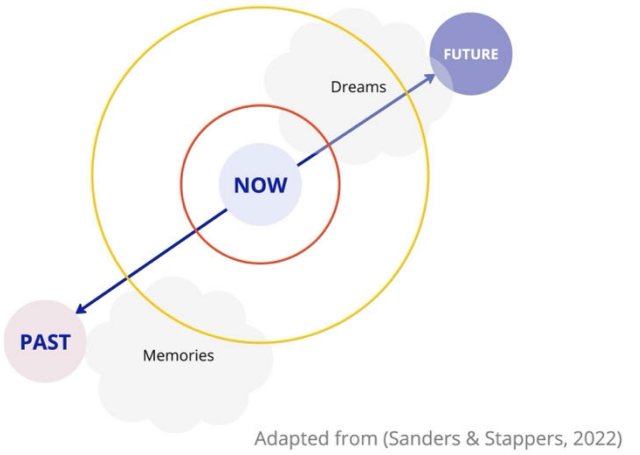


Figure 14 The Path of Expression. (Adapted)

DESIGN CONSTRAINTS

The merging of design and design thinking is noticeable in both academic literature and professional discussions, leading to confusion in this project and real-world scenarios. Integrated design education and interdisciplinary approaches have compounded this crossover, blurring disciplinary boundaries further. Variations of disciplinary practice were reflected in recruitment practices for this project and the diverse composition of participant groups. Despite having design qualifications, not all practitioners identified themselves as designers, indicating a complexity in self-perception within the design realm and how others interpret those perceptions.

SUMMARY

While participants had diverse perspectives on creativity within design, many stressed its importance in personal and professional realms. Exploring creativity through discussion, practical engagement, and reflection proved valuable in fostering new connections, shifting perspectives, and enhancing understanding for participants and the researcher. The utilization of the Make Do Say method (Sanders & Stappers, 2020) effectively captured and generated insightful data by facilitating various forms of engagement. This approach enabled participants to express themselves comfortably and rendered the nuanced topic of creativity more accessible, thus reinforcing the value of employing qualitative methods that evoke creativity.

Notably, avenues for future research beyond the project's scope emerged:

- **Further experimentation:** Building on the *Say, Make, Do* method with the path of expression (depicted in Figure 14) to intentionally incorporate dimensions of the past and construct alternative futures.
- **Creativity awareness:** Combining reflective practice with the creative process proved valuable in deepening awareness of individual approaches to creativity. This insight from the methods identified a need for assistance in recognizing creativity and suggesting the potential value of creative facilitation—whether through prompts, people, technological agents, or other means.
- **Divisions of creativity:** Given the similarity in inputs across various categorizations and applications of creativity, there's merit in reconsidering the segmentation of creative acts by domain. Imagining creativity beyond traditional boundaries and within broader social contexts could yield profound implications for individuals navigating these environments.

Part Three :

Picturing Creativity

PART THREE: PICTURING CREATIVITY

ACTIVITY FINDINGS

PERSONAL EXPERIENCES OF CREATIVITY

Creativity surfaced through the experiences of nine designers engaged in an open-ended design activity. Prompted to intentionally think about and reflect on creativity as their processes unfolded, instances of creativity were not limited to the starts with idea generation or ends associated with the expression of a final deliverable. Instead, many valuable middle and in-between spaces surfaced, where creativity flourished. For some, the presence of creativity was acknowledged in retrospect, highlighting the difficulty of recognizing creative acts or moments as they occur.

The explicit request for creativity in the brief directly influenced the participants' approach. For some, this call for creativity provided a sense of freedom, characterized by feeling less pressure, being informal, less serious, more adventurous, and requiring less expertise to start. However, it had the opposite effect on others, immediately imposing pressure to be unique or original from the outset. The open-ended nature of the task, where responses could vary widely, along with flexible parameters regarding materials and, to some extent, time, elicited mixed reactions. While some felt uncertain about where to start, others did not, resulting in various emotional responses ranging from excitement to intimidation to feeling overwhelmed. Some individuals desired more constraints, as the abundance of blank space made the task particularly challenging. In contrast, others appreciated the broad scope, accepting the possibility of making mistakes and moving ahead anyway. Several responses highlighted the evolution of ideas through reflection and engaging with emerging solutions before fully understanding the 'why' behind them.

> *"It's one of those activities that's kind of scary at first when you don't know where it's going. You don't know what to do, and you don't know what is expected. I think that's the hard part for me. Just to like to realize what I need to do first."*
> *~ Participant Nine*

CREATIVE PRAGMATISM

Balancing external pressures with internal needs was influential in steering the creative process. Some participants assessed their creative capacity based on available resources and compared it with the project requirements to decide how original they needed to be, or in other words, how much effort the task required. All participants mentioned resources and constraints as important aspects of their processes, including time, availability, competing priorities, skills, energy, and interest. Two people highlighted the importance of having the right frame of mind and context. These aspects strongly influenced the approach to the problem space and, to an extent, the willingness to explore outside what was obvious or readily accessible.

> *"I walked around with the prompt in my head and thought about it here and there. When I was walking my dog, commuting somewhere, in yoga, or in the shower. I think of this in-between space that sometimes helps me to problem solve."*
> *~ Participant One*

Getting started represented the interplay between inspiration, idea generation and idea selection. The idea came right away for some. Others noted the task and set it aside, waiting for inspiration to come or to be in a preferred state of mind. Some enacted personal strategies to prompt ideation and brainstorm ideas using methods that had worked previously. Some procrastinated, counting on the deadline pressure to be a catalyst for creativity. While this was an individual project, some people looked for opportunities for external collaboration in the form of people, places, and technology for mood setting and inspiration. Familiar tools like pencils, everyday interactions with things, and even dreams provided unexpected inspiration. For many, cycling through periods of action and reflection was a part of getting started.

> *"I had this suspicion that the deadline getting close to the deadline would be the thing that triggers some creative ideas to spark."*
> *~ Participant Four*

CREATIVE SPARKS & 'AHA' MOMENTS

There were different responses to the notion of a creative spark in reflections and conversation. For some, it signaled the emergence of a valuable idea, often described as an "aha" moment, a point of clarity, or a realization of a way forward. These moments appeared to occur spontaneously for some individuals. For others, the creative spark was linked to the effectiveness of the chosen approach and deliberate methods employed to generate creative ideas. Feelings of excitement or relief accompanied the spark, pointing to a continued emotional and energetic engagement throughout the process.

> *"I think it sparked on me that I want to talk about my personal story with coffee. That's when I just started writing. And you cannot stop because you're so into it. I think that that was the moment for me."*
> *~ Activity Participant Eight*

CREATIVE FEELINGS

Emotional engagement acted as a catalyst, inhibiter and barometer for creative processes. Participants connected inspiration, broad starting points, idea realization, skill assessment, and constraints to various emotional experiences, including overwhelm, joy, excitement, curiosity, fear, frustration, levity, and pleasure.

Participants felt most creative when they started working on the project, experienced states of flow (Csikszentmihalyi, 1990), overcame conceptual or tangible obstacles and freed themselves of self-criticism. Four of nine people reported feeling most creative during hands-on experimentation and physically exploring their ideas, representing a middle ground where creativity occurs.

> *"Right in the middle is where I felt the most creative because I was in that zone, you know, not overthinking things."*
> *~ Activity Participant Two*

Learning from others' examples and experimenting with mock-ups were also key to achieving clarity, allowing individuals to foresee potential issues and solutions in their projects. Although an individual

activity, some participants sought out external motivation and feedback from people or, in one case, started a dialogue using a large language model called Chat GPT.

> *"I think that having space to play throughout the execution is extremely beneficial; being able to physically work out the design problem was probably the most satisfying component of the process for me. I felt it in my body. I felt colors rather than just seeing them."*
> *~ Activity Participant One*

The process of bringing an idea to life highlighted creativity in moments of exploration, construction, material interaction, and, notably, reflection. For some participants, the recognition of creativity was noticed in retrospect, not while engaging in the activity (see Figure 15). While there was satisfaction in what was made, the output was not perceived as central to the creative experience, described as a product of technical skill and resource constraints.

> *"I think it sparked for me in the reflection process. Letting myself think about what I feeling, doing. Taking breaks and then coming back to it. Letting myself make connections and relate things together."*
> *~ Activity Participant Six*

Contrasting stated instances of creativity and experiences of feeling creative. Some participants recorded multiple instances of 'creative sparks' throughout the process.

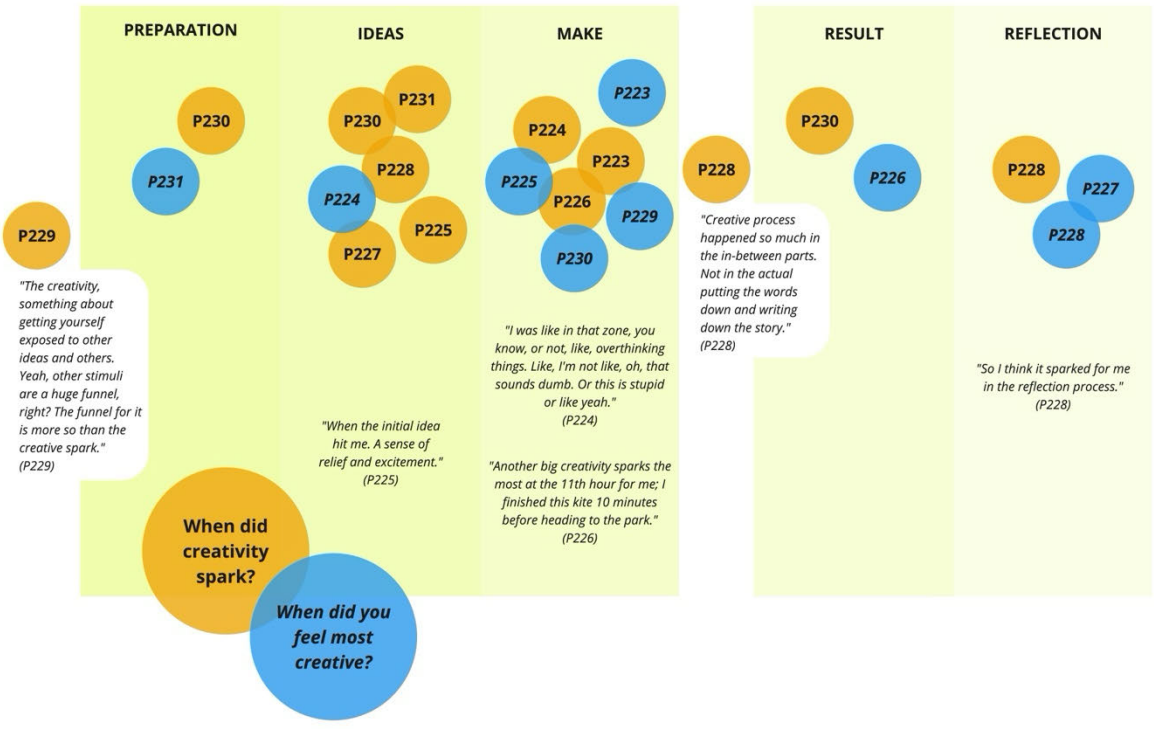


Figure 15 Comparing reported sparks and feelings of creativity.

INSPIRATION SPARKS, CREATIVITY PROBABLY TAKES EFFORT

Interestingly, the reported sparks of creativity did not necessarily align with the feeling of creativity (See Figure 15). Five participants encountered sparks of creativity during ideation and felt creative at different phases. Notably, there was not one singular spark of creativity for some, but many as they moved through their processes. While creativity might seem to strike spontaneously, upon reflection, many shared it's more likely a combination of factors. Some challenged the notion of a creative spark entirely.

> *"I think this whole idea of the spark of creativity is kind of problematic. I think it comes much more through rigorous practice than through a spark."*
> *~ Participant Seven*

These reflections underscored the multifaceted nature of creativity, where personal experiences, internal and external context, passive reflection, learning from others, and social interactions converged to spark moments of clarity and insight along the way.

MATERIAL ENGAGEMENT

Creativity was connected to the initial idea and persisted throughout the process of making the idea a reality. Knowing what and how to do the next step contributed to flow states and opportunities to lean into the work. One person spoke about the influence of acquiring new materials on the direction of their project, demonstrating how external factors can unexpectedly steer creativity. Another highlighted the transition from a timeline diagram to a narrative approach, highlighting a flexible and organic process. Two people realized technical and time constraints would limit the original idea and switched the project intent to deliver a prototype instead of a final expression of the idea.

While some participants preferred working within the comfort of familiar mediums, like drawing, writing, design software, or photography, others embraced the project's flexible parameters as an opportunity for experimentation with tools and techniques. Integrating digital tools like video and technologies like image generators powered by artificial intelligence presented a mixed picture. While some saw these tools as avenues to expedite or enhance the creative process, others encountered limitations that hindered translating envisioned ideas into reality. The engagement in experimentation provided new information that otherwise would have been hard to prioritize time to explore.

The transformation of initial concepts over time was characterized by a blend of adaptation to practical constraints, reflective practice, and the influence of personal relevance. Despite the diversity in experiences and outcomes, a shared understanding of the creative process as flexible, evolving, and deeply personal emerged from these activities. While there was satisfaction about what was made, many felt the output was more of a product of technical skill and resource constraints rather than creative ability.

Some participants found it difficult to tackle open-ended problems even in environments designed to be low-risk, flexible, and supportive. They struggled with the lack of feedback, which made them uncertain about whether they were addressing the problems correctly. Despite the intention to create a nonjudgmental and safe space where participants could leave at any time, feelings of failure and concerns about meeting expectations still emerged.

Depicting the non-linear creative process and associated emotional engagement while going through the “Secret Life of Things” activity, captured through reflections of activity participant 223, a librarian

whose engagements with design include the design of learning objects, communication assets, and events as well as attending the Strategic Foresight & Innovation graduate design program at OCAD University.

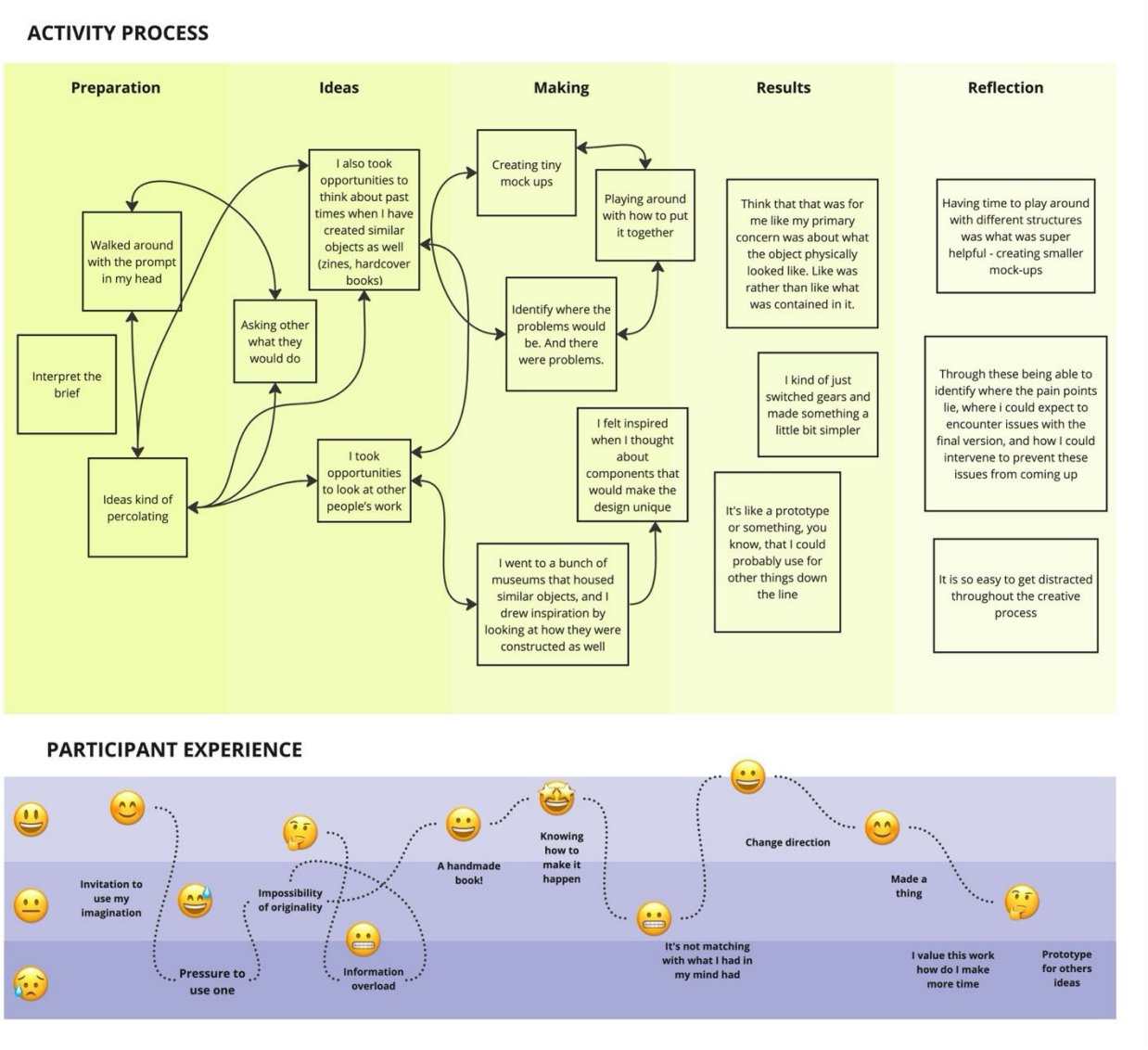


Figure 16 Mapping a participant's experience.

Using a journey map helped to understand the full experience of the activity, identify moments of creativity and its qualities, and highlight the emotional engagement throughout the process.

SUMMARY OF KEY INSIGHTS

People experienced creativity differently: for some, insights occurred unexpectedly, showcasing creativity's spontaneous nature, while for others, ideas developed slowly, requiring patience and disciplined effort. Creativity was viewed as a dynamic interplay between conscious and subconscious processes, influenced by personal experiences, internal and external contexts, inspiration, imagination,

and the ability to realize ideas. Many participants described cycling through periods of action and reflection in their creative processes.

Creativity occurred in the in-between moments and interactions between points of interest, exploration, roadblocks, material interaction, and reflection. While personal judgments and expectations about output were communicated, participants did not attribute creativity solely to the end product but emphasized the experience and process instead. The addition of reflection to the creative process was valuable for deepening self-awareness. Some participants acknowledged creativity in retrospect, highlighting the challenge of recognizing creative qualities as they appear.

All participants emphasized the importance of resource availability, including time, capacity, and energy, in their creative processes. Many demonstrated creative pragmatism, contrasting impractical notions of creativity with practical considerations. They also highlighted the significance of framing, prompts, and context, which deeply influenced motivation and willingness to explore. Engagement in experimentation provided new insights that would have been difficult to prioritize otherwise.

The concept of a creative spark was associated with the emergence of ideas but not necessarily with the feeling or experience of creativity. This distinction suggests that creativity persists throughout a creative process, challenging the notion of waiting passively for inspiration and instead highlighting the deliberate engagement required to foster creativity.

> *"It's a muscle to be used, and I think that is where I started with this. I have not used this muscle this way in a while. This is going to be harder than I thought. So, exposing myself more regularly would be beneficial because it was enjoyable at the end of the day. I think it will, at the very least, offer perspective in other ways that I actively use creativity in my life, so there is value in it."*
> *~ Participant Three*

INTERVIEW FINDINGS

APPLIED CREATIVITY IN PROFESSIONAL CONTEXTS

While most recognizable in visual expression and brainstorming, accounts of creativity included moments of on-the-spot improvisation, assessing constraints and opportunities for risk-taking, or engaging audiences. Creativity was connected to collaboration, mentoring, and, in one example, offering a 'mood-changing buoyancy' to completely transform the energy in a space. What surfaced is that beyond the clear-cut areas of creativity, problem-solving, and visual aesthetics, there was a valuable space where creativity showed up in the nuances of communication, management, and client relations.

> *"You know, so there's something amazing about using creativity. It's a tool to unlock engagement, capture attention, and, I think, have faster conversations. And that's the power of creativity, transforming an idea into something that people can hold on to, and maybe, just maybe, they'll hold on to it and engage with it as their own."*
> *~ Participant One*

Figure 17 Where creativity happens in professional contexts.

Many interview participants pointed to non-visual sources when asked where creativity happens in work.

SATURATIONS OF CREATIVITY

Personal definitions of creativity were closely linked to its utility and worth. These discussions highlighted ongoing debates about whether creativity involved thinking, making, or both. This connection between personal understanding and practical application in the workplace was evident.

> *"I do think the work I do is a commercial creativity, and I'm able to harness something that comes naturally to me and naturally to my team to meet commercial objectives." ~ Participant Fourteen*

While all interviewees acknowledged creativity in their work, its recognition varied. For instance, crafting a visually appealing presentation deck might be perceived as superficial creativity compared to tasks like generating a campaign concept, which differed from effectively conveying ideas to clients. Similarly, throwing a clay vase is another form of creativity, distinct from designing intricate floral wallpaper for scenes in violent video games. This demonstrated that perceptions of creativity had a strong influence and depended on factors such as fields and contexts and perhaps creative identity.

> *"Once you're coming up with some sort of concept, idea, practice, or process that is different in some measurable way to what's gone before, that case is creativity. It doesn't have to be better. It can be worse as well. My context of creativity is not grand artistic gestures. It's not the creative process. It's anyone or anything in any field that's making some sort of marked change to the status quo, or the way things were previously."*
> *~ Participant Eighteen*

MISREADING CREATIVITY

The absence of shared interpretations of creativity, its broad applications, professional categorizations of creative work, and individual experiences all contributed to the challenges of appreciating and describing creativity. It also led to the realization that in this dynamism was the possibility that creativity and creative contributions were unrecognizable. Reporting from the professional practice space raised the question: *Did people know when they were doing creative work?*

> *"I do think in their jobs how they might apply their creativity, but they may not necessarily think of themselves as creative, or it may not be recognized as creativity."*
> *~ Participant Twenty-Three*

Perspectives on creativity ability varied, with some attributing creativity to specific departments or individuals. This could result in the undervaluation of creative contributions from less experienced team members. Conversely, experienced individuals transitioning away from hands-on design work often discovered new forms of creative contribution through facilitation and mentorship roles.

> *"I'm very good at basketball. I am very bad at tennis. That doesn't make me a bad athlete. And so, that we should recognize creativity more robustly."*
> *~ Participant Sixteen*

THE BANAL & THE BEAUTIFUL

Creativity played a vital role in managing and interpreting constraints throughout the project lifecycle. This was particularly evident when navigating the delicate balances of stakeholder expectations, practicality, novelty, viability, and feasibility. Creativity was observed to manifest in various aspects, ranging from the ordinary and expected to the less glamorous behind-the-scenes work that bridged the start and end of creative projects.

> *"Creativity shows up in how you decide who you want to be at the table in terms of stakeholders, the viewpoints or the inputs you include. So, in that sense, I think creativity, is less of a kind of flashy visual type of creativity but a way to organize information."*
> *~ Participant Twelve*

COMMUNICATING IDEAS

Participants highlighted the anxiety-inducing, encouraging, crowded, but essential nature of sharing ideas, works in progress, and finished concepts. Asking for, delivering, and receiving feedback were associated with important consequences for creativity. The communication of ideas could build the bridge between conceptualization and realization or burn it down. Some participants thrived off collaborative creative endeavours, feeling more comfortable involving people at all process phases. In some views, sharing was a reciprocal process, where thinking could be pushed and pulled to the benefit of all involved.

> *"It is important to find your people, who can be direct collaborators or really good sounding boards for ideas to help you edit or distill, or to bring in their ideas that could help unveil other ideas you didn't think of."*
> *~ Participant Twenty*

In teams, social dynamics like leadership styles and accepting creative processes and expressions significantly influenced the creative climate and individual participation. Integral to many design engagements was the necessity of bringing other people, be they clients, colleagues, or collaborators, along.

> *"I think when designers design in a box or silos, and they're not used to allowing other people in to provide that feedback, it gets a little tricky. But I've just tried it again to have a bit more of a flexible open production or creative process to allow people to see what I'm doing, and it doesn't even have to be final along the way."*
> *~ Interview Participant Fifteen*

NEW-ISH

An observation emerged concerning the perception of originality in design work. While novelty was often sought after, its interpretation varied. Creativity was commonly associated with generating new and usable outcomes, ideas, products, or processes. A dissenting view from participants working

directly in design, with a bent towards art, pointed to a tension when creativity is overly focused on tangible and 'always new' outcomes, neglecting the importance of creative experiences. In their view, pursuing novelty as the primary goal can disregard valuable traditions and contributions from different disciplines that might not fit an *avant-garde* narrative and could still be beneficial.

> *"I think [creativity] becomes a little more meaningless when you do not understand it. Like I have spent a lifetime now in the arts and learning all my very difficult artistic lessons and I have a million more to learn. I have a real kind of resentment about it getting misused sometimes and exploited so unpacking it could be quite helpful for that."*
> *~ Interview Participant Nineteen*

Many participants contributed to the idea that an overlooked aspect of creativity, where true novelty and usefulness lay, often existed in the intangible aspects of collaboration and communication. Examples included how problems are created and framed, how to do something without prior experience or resources, curating methods, creating new ones fit for purpose, or conveying information to meet various needs.

SUMMARY OF KEY INSIGHTS

Creativity in professional settings extended beyond typical areas like problem-solving and visual aesthetics to encompass nuances of communication and management. Personal connections and understandings of creativity directly influenced its practical applications at work. For those situated directly in the industries, creativity required intention and deliberate practice.

While participants agreed that creativity manifested in many ways, its recognition and valuation varied. This may relate to individuals' backgrounds and experiences with creativity. Participants observed that truly novel endeavours were the exception rather than the norm in broader design contexts, including education, engineering, architecture, and business. Instead, creativity was directed at remixing existing ideas, facilitating knowledge transfer between domains, and working towards incremental change.

What emerged was that creativity existed not only in clear-cut areas like problem-solving and visual aesthetics but also in the middle stages of design processes and in the nuances of communication and collaboration. Sharing was linked to social dynamics and individual communication ability, which were seen as critical in shaping creative environments and influencing individual participation. Perceptions of creative value and use varied with context. Consequently, difficulty in recognizing and appreciating creative contributions led to the realization that creativity might be pervasive yet frequently unrecognized in everyday professional tasks.

Part Four :

Forms of Creativity

PART FOUR: FORMS OF CREATIVITY IN PRACTICE

PRACTICAL CONSIDERATIONS & IMPLICATIONS

This section, representing the *Knowledge* level of the DIKW pyramid in Figure 18, presents three primary categories of interpretation derived from synthesizing observations of creative action and discussions of creative experiences in design contexts. These categories counted insights from experiences of creativity in the participant activity and insights related to more structured design problems typically encountered in professional settings. Interpreting this information established links between design contexts, between theory and practice, and presented different forms of creativity within design practice. These interpretations are categorized into three contributory knowledge buckets:

Rethinking Creativity in Design Contexts

- Divisions of the creative process and design process
- Rethinking creative boundaries
- Conceptions of time as a constraint and catalyst

The Dynamic & Contradictory Nature of Creativity in Design Contexts

- Leveraging creativity and its occasionally contentious nature in design contexts
- Twelve dynamic tensions for creativity in design contexts.

Advancing Combined Theories of Creativity & Design

- *Designerly Defiance* through the Triangular Theory of Creativity (Sternberg, 1996)
- Rethinking Creative Achievement through the Four-C Model of Creativity (Kaufman & Beghetto, 2009)

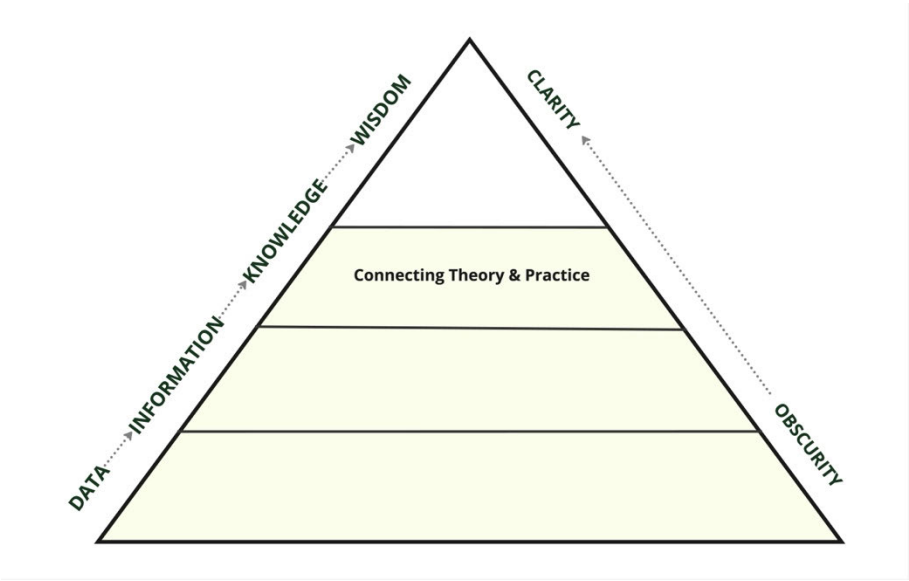


Figure 18 The DIKW model emphasizing Knowledge.

RETHINKING CREATIVITY IN DESIGN CONTEXTS

DIVISIONS OF THE CREATIVE PROCESS & DESIGN PROCESS

> **"Now, I am creative every day, but it's a very applied creative. It's a problem-solving creative. It's agility and flexibility. I often don't have the time to allow things to percolate with no fixed outcome." — Participant Twenty-Three**

When thinking about applied creativity, siloes like "free" and "structured" creativity necessarily reflected the constraints of design tasks and contexts. Broadly, distinguishing between applications of creativity across domains like art, craft, and design helped to direct the development of technical ability, methods, and processes. Within professional design practice, divisions spoke to levels of freedom in the types of problems presented and how to go about them. In this research, reported experiences of creativity helped to locate what it looked like and how it showed up in design contexts. The constraint of design required that creativity be fit to a problem, often with a predetermined outcome. This was a big differentiator between reported creative experiences and the idea that the more perceived freedom, the more creative the work, and vice versa.

While distinctions of creativity are often academic, they also influence perceptions of the value of creative work in broader contexts. 'Unstructured' creativity may sometimes be viewed as undisciplined or impractical, whereas 'structured' creativity might be seen as overly commercial, potentially overlooking the authentic or innovative aspects of the creative process. Both forms were represented in this study and were valuable in recognizing creative contributions' full scope and impact.

While different forms of creativity and applications of creativity were discussed in the research and literature, the underlying requirements for creativity across contexts were remarkably similar. Bringing creativity about required some combination and level of imagination, inspiration, methodologies, and embracing cycles of experimentation and reflection, both internally and externally, all sustained by a receptivity to the world. One participant characterized these creativity inputs as learning:

> *"[Creative] inputs are learning about new things, prompts, and ideas. New bits of information. To do something in a creative way, we need to change the way we learn, right?"*
> *~ Participant Four*

RETHINKING CREATIVE BOUNDARIES

More than half of the participants engaged in creative practices outside of their primary roles for enjoyment, well-being, and exploration. Activities included comedy, film, science-fiction writing, interior design, art, game development, graphic design, craft, and experimentation in virtual spaces. The interplay of creative energy between professional and personal spheres stood out as a tangential and important theme. Crucially, qualities deemed vital to professional success—such as openness, imagination, adaptability, research, and curiosity—were observed to have been cultivated outside traditional work settings.

CREATIVITY IN PROCESS

In this analysis, design contexts and methods often failed to recognize the foundational aspects of the process of creativity identified by Graham Wallis in 1926. The research indicated that creativity, regardless of its application in design, required strikingly similar inputs, irrespective of engagement. These inputs were typically gathered and refined outside the constraints of specific projects, workplaces, or desired outcomes, consciously or not, and could be described as the value of 'lived experience.'

Insights from activities and interviews with participants differentiated between 'free' or 'unconstrained' creativity and 'structured' creativity, noting that each type had distinct practical and personal implications. Still, when asked how creativity came about, participants attributed that spontaneous and latent creativity stemmed from combinations of curiosity, mixing reference points, exploration, inspiration, and imagination. These findings highlighted an ongoing, often subconscious creative process underlying design engagements. Notably, applying creativity involved inputs that transcended the immediate confines of design tasks and suggested consistency in the creative process that persisted outside of various design briefs, methods, and engagements within design paradigms.

> *"Sometimes I've had concepts, by the time I've been briefed on the project. But many of those times are because you've been inspired by the project and outside external influences." ~ Participant Thirteen*

WORKING CREATIVITY

This research highlighted the significance of acknowledging the work involved in creativity and its requirements, which could transform our understanding of design work. Creative inputs like 'reading around,' exploring, learning new things, and experiencing difference were crucial for creative acts. creativity. Importantly, recognizing that these inputs expand beyond the confines of practice, drawing attention to how our time is divided and what counts as productive work.

The research evidently showed the coexistence of free and structured creativity, challenging the notion that these forms are mutually exclusive. For instance, an artist might pursue a deeply personal vision (free creativity) while also considering commercial aspects (structured creativity). There is a valuable interchange between these, engaging both types of creativity. One participant gave the example of a digital side project, a creative endeavour, that reciprocally created space to explore the boundaries of their academic work, which would otherwise be difficult to do.

> *"[The Object Type 3] project has really helped me clarify a lot of my thinking around different kinds of issues in my dissertation. Object Type 3 centers around this futuristic global AI governance regime, allowing me to explore the limitations of what those kinds of frameworks would look like more creatively is really helpful. So, [this creative project] links up to my research, and there's a lot of back and forth between the two."*
> *~ Participant Seventeen*

Exploring these multifaceted interactions further, our study suggested that the traditional divisions and silos within creative practices might be limiting. A more integrated understanding of creativity could have led to reorganizing design processes and environments in ways that more effectively fostered creativity. This reorganization might have involved rethinking the creative 'needs' of individuals, acknowledging parallel and differing creative timelines, and facilitating cross-disciplinary interactions that reflected the complex nature of creative tasks. Such changes could have radically shifted how we thought about and organized design work, enhancing its effectiveness in producing innovative outcomes and making it more inclusive and adaptable to the diverse ways in which creativity manifests.

TIME UNDER TENSION

CONCEPTIONS OF TIME AS CONSTRAINT & CATALYST

All 24 participants cited time as both a constraint and a significant factor in their creative processes and experiences. On one hand, they noted that time pressure and tight deadlines could inhibit creativity, leading to stress, reliance on previously tried methods, or rushed decision-making. Conversely, some individuals found that such pressure could also stimulate creativity by forcing them to think quickly and forge innovative connections. When interpreting the data, the concept of time scarcity, rather than time abundance, had an equal balance of positive and negative emotional associations among the participants.

Referencing the creativity paradox mentioned in the opening chapters, participants acknowledged the conflict between nurturing creativity and adhering to predictable timelines and efficiencies. This intersectional tension, which organizations and designers must navigate, highlighted the challenge of fostering innovation while maintaining reliable practices and often working within cultures of urgency.

LESS TIME

Participants suggested a constant focus on productivity can undermine the quality of creative outputs by limiting the opportunity to truly explore one's imagination. Over time, the pressure to produce useful results can make imaginative thinking seem less accessible, as it often requires time to engage with uncertainty and persevere through challenging ideas. However, time constraints can also act as a catalyst for creativity. The urgency of a deadline forces quick action, making people rely on available resources and put existing knowledge into practice. Some mentioned the ability to improvise as a test of their creativity ability, in making do with not a lot.

> *"There's like this faster pace. It's like you're just trying to reach this result faster. Maybe at the expense of the pleasure of just going a little bit slower and enjoying the process."*
> *~ Participant Twenty*

> *"When I think about creativity in crisis, they kind of seem like polar opposites. But it's a very specific need that is time-sensitive, and I have to use creativity to help solve problems."*
> *~ Participant Fifteen*

MORE TIME

Participants suggested that allocating additional time for creative activities led to greater satisfaction from completing projects, giving ideas more time to percolate, and enhancing creative skills through extended reflection and experimentation. Facilitation anecdotes from workshops indicated that as participants had more time to immerse themselves, their readiness to engage creatively increased significantly. This often resulted in a cyclical process where initial outputs were revisited and expanded upon, with necessary pauses for creative incubation, enabling a more comprehensive exploration of the creative landscape. These observations prompted questions about the allocation of time for unstructured discovery, exploration, and curiosity in a world that values efficiency and endpoints.

DYNAMIC & CONTRADICTORY CREATIVITY

LEVERAGING CREATIVITY & ITS OCCASIONALLY CONTENTIOUS NATURE IN DESIGN CONTEXTS

> **Staying with the trouble. There's no way out. There's no way through. You just have to sit there with the trouble.**
>
> **~ Donna Haraway**

A central theme in the participants' experiences was the intricate interplay of tensions and constraints, revealing that creativity manifested on both sides of these divides. For instance, as previously discussed, limited time could serve as either a catalyst for creativity or an inhibitor. This observation led to a deeper exploration of the dynamic and contradictory nature of creativity within the interactions among internal and external dimensions—encompassing individuals' processes, creations, and environments. The further juxtaposition of these tensions highlighted the forces of emotional entanglement and the push-and-pull dynamics intrinsic to creative processes.

Rather than striving for equilibrium, these unresolved tensions seemed to actively foster creativity, compelling participants to engage dynamically and creatively with their challenges without seeking balance or resolution. This approach is a distinctive characteristic, emerging not from prescribed methods or techniques but from navigating the complex interplay of constraints through experience. These frequent interactions suggested that moving beyond conventional either/or solution-based mindsets in design practice to embrace both/and perspectives might be pivotal. Such an approach could better utilize creativity and enhance capacity in design work, potentially making creativity more explicitly and deliberately useful in this context.

Below are twelve tensions that are interesting territory for bringing awareness to creativity and its contributions when faced with these constraints. Tensions like static create friction where creativity operates that is sometimes visible, felt, heard, generated, provoked, and occasionally surprising or shocking.

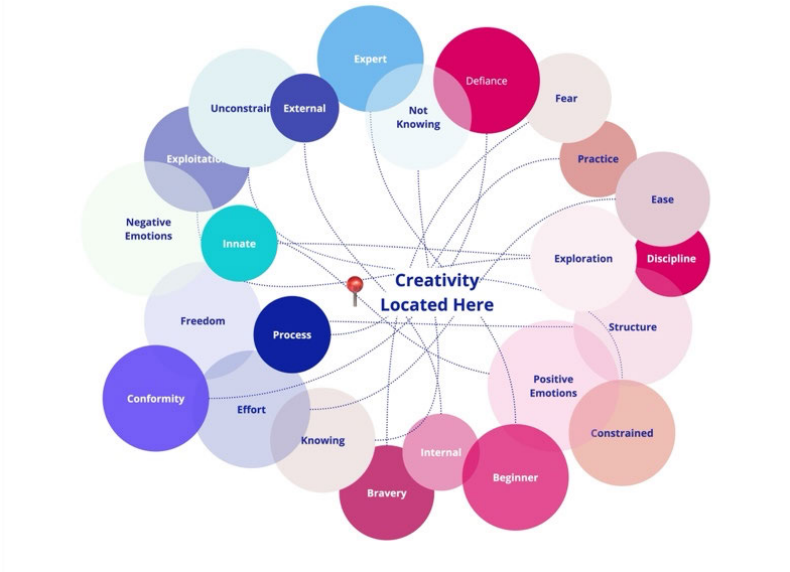


Figure 19 Creativity contradictions and tensions.

INTERNALIZING & EXTERNALIZING

An important challenge in professional settings was the notable difficulty in communicating ideas that were not yet fully resolved. Some participants described their creative processes, particularly during idea generation, as highly internal. They highlighted the challenge of externalizing these internal processes, especially when required to do so in group settings or during routine practice. This often created a conflict between intuitive idea generation and the demands of external expression.

> *"It is a bit challenging because it's hard to bring other people along, and if I can't bring other people along, I'm not benefiting from their thinking, and I'm also not pushing their thinking. By the time I surface on the other side, sometimes I'm so far from them that they struggle to understand."*
> *~ Participant Seven*

This difficulty in translating complex, often intuitive thoughts into forms that others can comprehend and engage with presents a significant challenge in research and professional practice. This discrepancy in creative processing and creative output is significant. The need for externalization might compromise an idea's conception or originality, distort creative intent, or prevent creativity from being realized.

> *"I think a lot of what you can't really capture in the medium, that we're expected to communicate, all the things that we notice or feel or experience, like sentient things in that in-between space are lost in communication."*
> *~ Participant Six*

> *"You can watch good designers never succeed in what we would call a commercial capacity because they won't shout about their work, and then you have people like me who are not as gifted aesthetically in design, but I'm good at telling people why it's good, and I've won awards simply for framing it better than others."*
> *~ Participant Sixteen*

CONSTRAINED & UNCONSTRAINED CREATIVITY

There was a continuous interplay between the desire for creative freedom and the benefits of structured guidance. This tension stemmed from the need for space to explore ideas while adhering to established theories, norms, and accepted methods. On one hand, creativity was fueled by the open-ended exploration of ideas; on the other, it could be guided and sometimes constrained by predefined limits. Excessive freedom could be overwhelming, making it difficult to select a direction or make impactful decisions. Conversely, too much reliance on frameworks could stifle creativity. Misusing constraints could be viewed as extreme "creative challenges" rather than recognized limitations.

> *"There's a limit, you know. It's not limitless creativity. There are boundaries, which happens in any kind of design situation. There are always these guardrails to work within, which makes design interesting. "*
> *~ Participant Two*
> *"The extremes can be helpful. Having really rigid deadlines and parameters can be very helpful, but not too many. Too loose and too open can be kind of overwhelming. So somewhere in between."*
> *~ Participant Twenty*

NEW & FAMILIAR

The paradox of new and familiar was a fundamental aspect of design practice, where innovation often intersected with the comfort of familiarity. Designers constantly navigated this tension, seeking to create novel solutions while ensuring that they remained accessible and relatable to users. While innovation drove progress and differentiation, familiarity fostered acceptance and usability. Overly radical designs have the potential to alienate users, while the overly familiar risked being overlooked or dismissed as unremarkable. Some emphasized the importance of considering familiarity and best practices as constraints.

> *"That's like if you're trying to work in the innovation space, is the like exact sweet spot that you're trying to occupy, right? It's like they need to be able to see it, you know? Like, is this something that I can relate to and I kind of intuitively get it, but I haven't thought of it before, but that's super hard to do."*
> *~ Participant Ten*

In the design process, 'best practices' and standardization contributed to efficiency and ease of understanding through familiarity. They valued proven processes and existing reference points for attributes like clarity and predictability.

> *"I do best when I can relate it back to something I already understand. There's comfort in that, and that gives me confidence. [In the activity] I needed the confidence and comfort of something that I already understood to allow me to iterate and produce, something I'd feel good about."*
> *~ Participant Three*

Others spoke to the value of challenging the familiar when necessary, advocating for newness in methods to counteract 'sameness' and boredom, particularly in digital spaces.

> *"Sometimes, it would be nice to create something insanely different. Something completely strange. You may not know how to interact with it. I love that kind of stuff because everything else is just like user-focused, where it's like, how do I get this person through this survey or something, the fastest, and the easiest way. OK, that's great, that has a purpose, but for other things, I just want to see like random shit. Something unexpected every now and then would be cool."*
> *~ Participant Two*

POSITIVE & NEGATIVE

Some experiences demonstrated that both negative and positive effects contributed to creativity and were not inherently good or bad for the process. Stages of comfort and discomfort were accepted as a natural part of a creative process, challenging the notion that creativity solely originates from places of comfort and positivity. Some mentioned the ability to leave open ends and that some things won't or can't be resolved, suggesting adaptability and flexibility to circumstances. Anger and antagonism were motivations for creative action and drivers for change.

> *"If you're in antagonism with something, then it can make you creative. Not everything has to be lovely to be creative."*
> *~ Participant Nineteen*

> *"Your creativity, some of the struggle and some of the pain, that's part of it. If you're just trying to create things fast, you could be skipping some of the stuff that could push you towards more original things, or just new things. Some of it's fun. Some of it is the struggle part of it, you know."*
> *~ Participant Twenty*

> *"But as I kind of transitioned into the working world and the discrimination that I faced and even just trying to move up ahead, I had to learn how to put the emotion aside, especially from my reaction to things and knowing like, OK, you can be emotional, or get mad, but you still have to sell them on it."*
> *~ Participant Fifteen*

THINKING & DOING

Creative thinking typically involved generating novel ideas and exploring unconventional solutions, while creative expression primarily entailed translating these ideas into tangible outputs through various mediums, necessitating specific technical skills. The divide between these two aspects—thinking and doing—was evident in varying definitions of creativity. Some encompassed both ideation and execution, whereas others concentrated solely on the cognitive processes.

> *"Having ideas is one thing. If it doesn't escape your brain, does it count as being creative because you're not creating? By putting things out there into the world. I don't know. Do you think that counts as creativity?"*
> *~ Participant Four*

Participants expressed differing views on creativity: some argued that an idea must be externally expressed to be considered creative, while others contended that the act of expression itself could influence and enhance the creative thinking process. This distinction underscored the evolving separation between traditional design disciplines, which emphasized making, and emerging design disciplines, which often dissociate from direct construction. Technological advancements have intensified this split, challenging the conventional boundaries between the conceptual (thinking) and practical (doing) elements of creativity and leading to a reevaluation of their interplay and processes.

> *"Having ideas is one thing. If it doesn't escape your brain, does it count as being creative because you're not creating? By putting things out there into the world. I don't know. Do you think that counts as creativity?"*

~ Participant Four

"Well, I think anybody who is creative, and it could be it, it's just a creative mind. It doesn't have to be that you do creative things."
~ Participant Thirteen

FEARING & FAILING

Fear of failure came up in conversations, and its role as a barrier to creative exploration and risk-taking, leading individuals to gravitate toward safe, familiar ideas. Despite this, failure played a crucial role in the creative process, offering valuable lessons and opportunities for growth. While embracing failure could pave the way for creative breakthroughs, the discomfort associated with it was significant.

"So that's actually just training creativity. I mean, that's one element and just helping people to see themselves as creative beings, to not be afraid of the thoughts in their minds. I think that's what holds people back, they think that this is a dumb idea."
~ Participant Twenty-One

The negative associations with failure—such as fear of judgment, vulnerability, and appearing unintelligent—further fueled the fear, highlighting fear as a potent deterrent in creative endeavors. Facilitation was suggested as a way of mitigating these fears and encouraging a more fearless approach to creativity, noting that fear and failing were also fruitful places for innovation.

"I think one of the worst things that can happen is anyone who is a designer, either trained or not, the first thing they create or design fails or fails negatively. You know it gets dismissed. It gets demonized. It gets criticized without any real relevant feedback, and then it just completely demotivates them going forward. And they have that trauma of a failed first attempt."
~ Participant Eighteen

EASE & EFFORT

Ideas might seem to flow effortlessly for creative individuals, yet participants highlight that creativity often demands discipline, hard work, and significant energy. While the creative process is frequently idealized as a state of flow—an immersive experience marked by focused engagement—the reality involves substantial cognitive effort and persistence. This contrast between the perceived ease of creative flow and the actual labour required underscored the importance of acknowledging that creativity most often takes work. Recognizing this gap would help to inform realistic expectations and enhance appreciation for the intricate nature of the creative process. Additionally, discipline might be expanded to be collaborative rather than an individual trait.

"I think it's just overwhelming to be creative all the time"
~ Participant Nine

"Or it could be as a creative person sometimes, you have dry spells. It's not like toothpaste that you can squeeze out another drop. So, when the ideas aren't coming as quickly or as clearly, I used to tell my designers, you know, get up, walk around like you know, you're not somebody who has a checklist."
~ Participant Thirteen

"I think they work really hard at being creative. They have a follow-through that I don't think everyone has. They can think an idea is weird and try it, and then if it fails, fine. They are constantly creating. Trying new things all of the time. Tons of stuff fails. And some of it gets directed into different projects."
~ Participant Twenty

KNOWING & NOT KNOWING

The importance of naivety and asking unconventional questions was as crucial as demonstrating competence. Both presented a tension for designers in professional settings. Its value in process could be harder to impart externally, where a sort of hierarchical expertise conundrum presented itself when working with uncertainty and the unknown, exposing where industry and academia wants experience and proof of capability.

"In the vein of creativity, there are many jobs that think they want to bring more creativity. Those roles are called VP of Growth, VP Innovation, VP Transformation. They almost never want big ideas and they want you to change the world, acting the same as all of their other employees. They want new and want you to pretend you've done it three times before."
~ Participant Sixteen

While competence ensured efficient execution, naivety brought a fresh perspective unbound by conventional constraints. By daring to ask seemingly silly questions, designers could challenge norms, spark innovation, and discover breakthrough solutions, epitomizing the delicate balance between confidence in expertise and the openness to explore uncharted territories in design.

"Go into fields you don't understand and use that lack of ingrained knowledge to really question the why, and the process, and the ingrained assumptions in these specific areas, and what does and what doesn't work. One of the strongest attributes I have for being creative is being naive."
~ Participant Eighteen

GIVING & RECEIVING FEEDBACK

Reflecting and sharing ideas at the foundational level were deemed as anxiety-inducing and essential for creative processes. Socializing ideas and first drafts presented a vulnerability in asking for, receiving, and delivering feedback. The value of sharing wasn't solely about receiving feedback but also about advancing ideas beyond theoretical stages into tangible ones, where they could undergo critique, failure, and improvement. Furthermore, there was acknowledgment of the necessity to incorporate input from less creatively inclined individuals, like business clients. Translating such feedback into creative solutions emerged as another vital aspect of the creative process. Consequently, sharing wasn't just about enhancing creative work but also about nurturing a culture of open communication and learning from diverse perspectives.

> *"But then also there are times when the people who may not offer the best evaluation of creative have to be involved. And I think it's again learning how to take that information that has nothing to do with creative critique and figure out how to translate it back into the solution."*
> *~ Participant Fifteen*

Participants also discussed the courage to speak up and express unconventional ideas while navigating social norms.

> *"Surely creativity is giving permission to throw the formula out when it's not working. I would say creativity and confidence. And creativity is going, you know what? We're just going to run with this for now because there will come a point where we can bring it back. It doesn't have to be today or tomorrow. I think there is something incredibly creative about that. That comes, I think, with experience and expertise, there's something in that; I think with creativity, it's like in your creativity and enough to know when the most creative thing to do right now is to just go with the flow."*
> *~ Participant Twenty-Three*

There can be rigidity that prevents people from speaking up. The balance of personal risk and security could be deciding factors, where the safe choice may contradict the creative potential.

> *"I think, is kind of a lack of creativity because I don't know if people are speaking their truth, or if they're just doing what they think everyone else will think is reasonable."*
> *~ Participant Sixteen*

CHALLENGING & EMBRACING NORMS

Design tradition often provides a structured framework based on established principles, styles, and techniques, offering a foundation for creativity within a particular context. However, the introduction of new ideas requires a degree of freedom to challenge and reinterpret existing norms, pushing the boundaries of tradition, and fostering innovation. Considering tradition and freedom allows designers to leverage the strengths of both and defy them when appropriate.

"Somebody said, why do we always do it that way? What if there was a different way, right? Cause that's, you know, the spark of creative thinking. I mean, design ultimately is just the idea of intentional change."
~ Participant Seven

"I feel like everybody has it in them, to be creative and make unique, and fruitful creative outputs, but we think there are rules, right? You need to be educated in a certain way. You need to have specific credentials. You must do things a certain way; otherwise, you don't have legitimate value."
~ Participant Four

FANTASY & REALITY

Imagination emerged as a fundamental yet often overlooked component. Operating well in a world full of guidelines naturally tended to limit free thinking, highlighting the need for contexts that actively promote imaginative exploration. The importance of play and discovery through play came up in several conversations and activity experiences to reconnect with imagination.

"That sense of play, I can't emphasize enough how important that is, because playing means you're not afraid to actually just try something and let it go if it doesn't work. You're using play to unleash your imagination."
~ Participant Twenty-One

Facilitated 'permission' spaces allowed individuals to diverge from norms, engage their creative potential, and, in some ways, 'practice imagining'. Creativity involved not just accepting existing conditions but proactively exploring what might be possible.

"I've always enjoyed my imagination. It doesn't scare me. Some people are genuinely, for many reasons, probably afraid of their brains ability to go places and to imagine, you know."
~ Participant Twenty-One

PRODUCTIVITY & INEFFICIENCY

Participants noted the value of engaging creativity but struggled to prioritize such engagement amid daily commitments. The pressure to produce something valuable influenced how they managed their time, their willingness to try new approaches, and their capacity to wrestle with uncertainty. Some asserted that waste was necessary for creativity and exploration. The tension between the utility of creativity and its perceived uselessness affected their motivation and the depth of their creative output. Practical constraints could limit exploration and experimentation, potentially stifling innovation. Conversely, when creativity was unencumbered by utility constraints, it could inspire unconventional and original ideas. This tension also shaped the emotional experience of creativity, affecting the enjoyment and fulfillment derived from the process. For some, the crossover between personal and professional work provided insight and coherence in navigating these challenges. It also drew attention to the dominant assessment of creativity as an output, highlighting the disparity between outputs and the creative process.

"Creativity is a process, right? And it's one that you need to engage with a lot to develop all of the different knowledge and skills to engage in that kind of process and to be able to produce outputs that you are proud of and that other people find valuable. So maybe again, it kind of goes to this issue of artificial intelligence (AI) kind of like playing into this capitalist frame of thinking about creativity as something that's reflected in outputs rather than process. We think that if we automate the process, that's not the important part. If we speed that up and make that go faster and make the process more cost-efficient, then we can produce these outputs more quickly, and that's where the value truly lies. That's where creativity truly lies, right? So maybe by normalizing that, we're reinforcing this perception that the value of creativity lies in production and output rather than in process, right?"
~ Participant Seventeen

SUMMARY

Seeded is the idea that creativity emerges and thrives on the capacity to hold and work with opposites, inviting a continuous dialogue between conflicting elements and suggesting that creativity might be less about resolving tensions and more about leveraging them as sources of strength and inspiration. This challenges conventional and traditional views about balance and 'either/or' thinking, posits the idea that the presence of contradictory and dynamic tensions is an inherent and essential component of creativity, where they might be understood as not merely obstacles but integral components of creative work in design practice.

A "both/and" approach—acknowledging and embracing complexity and ambiguity—may better serve creativity, recognizing that two seemingly contradictory elements can coexist. Similar and worth noting is the "yes/and" improvisation tactic, which fosters continuous adaptation and integration of new information. Either approach might allow for a more nuanced and sophisticated problem-solving where dichotomies are seen as opportunities for synthesis rather than points of conflict.

This insight argues that creativity benefits from the ability to entertain and harness opposing forces, fostering an ongoing dialogue between them. Flexibility, adaptability, and resilience, frequently touted in literature, are vital, yet engagement with these opposites adds a profound layer to the creative process. Thus, creativity is portrayed not as the resolution of tension but as the strategic use of it as a catalyst for innovation and growth. This understanding can empower creatives to embrace a more holistic and nuanced approach to their work, acknowledging that true creativity often emerges from navigating diverse, sometimes opposing forces.

ADVANCING COMBINED THEORIES OF CREATIVITY AND DESIGN

> **"The creativity underlying creative work is not merely about challenge; it is about effective challenge—challenge that cannot only question things, but also that can question them effectively and potentially can change them."**
>
> **~ Robert Sternberg**

ALIGNMENT WITH THE TRIANGULAR THEORY OF CREATIVITY

Chapter One introduced the Triangular Theory of Creativity (Sternberg, 2016), which situated creativity in a paradigm of defiance. Insights from this study suggest that elements of this theoretical approach are already integrated within the design field and resonating in different design contexts. They reveal that creativity in design contexts is not only about generating ideas but also involves deeply engaging with and transforming existing paradigms and personal limitations.

Reframing creativity as a process of engaging with various forms of defiance, opens new avenues for understanding and approaching creativity in design contexts, potentially leading individuals to explore creative processes in ways previously unconsidered. Challenging the norm—defying not just the crowd but also personal and cultural zeitgeists—seemed to resonate across insights and literature in both design and creativity spaces. Here, this project starts to close the loop on the background literature and findings in relationship to core creativity theory.

The *Triangular Theory of Creativity* framework helps unpack the complex challenges designers face when pushing boundaries within their fields. By understanding creativity as an act of defiance—against conventional norms, personal limits, and cultural presuppositions—this alignment sheds light on the transformative potential of creative work in reshaping societal and cultural paradigms. It emphasizes the need for educational and professional environments to not only foster innovation but also support designers in overcoming resistance they might encounter.

Moreover, this perspective validates the emotional and intellectual efforts involved in creative work, empowering professionals to pursue transformative ideas. It broadens the definition of creativity beyond mere novelty to include the capacity to redefine problems and resist outdated frameworks, thus highlighting creativity's role in driving significant and often progressive changes. Ultimately, integrating this theory with practical design contexts encourages a deeper cultural appreciation of creativity, viewing it as a dynamic interplay between individuals and their socio-cultural environments crucial for fostering environments that recognize and nurture truly innovative thinking.

DEFYING ONESELF

Defying one's own beliefs and entrenched views is arguably more difficult than defying a crowd. It is in reference to the tendency of individuals to become deeply and firmly established in their own beliefs and ways of thinking. It is about how people can become set in their specific viewpoints or habits, making it difficult to see things from different perspectives or adopt new, creative approaches. This concept is significant in design because being entrenchment can lead one to resist changes and innovations, ultimately becoming a barrier to generating new or creative ideas. Some participants were aware of this of this phenomena:

"I'm deeply suspicious of design. I think practitioners and design practitioners themselves are also deeply entrenched in right and wrong, the way that any other practice is. I think institutions rely on us conforming; those are the same things that stunt creativity."
~ Participant Six

Some participants expressed creativity as a choice, using the example of career progression from a background in graphic design to design research to design management.

"Does creativity fit in my job? And the answer is yes. All the time, although in different saturations. I'm shaping things more. That shaping thing means I must be creative in how much I say to junior practitioners because I need to sit on my hands. I need to let them figure things out and do the creative work themselves but give them just enough that they feel motivated and that they get directionally where we need to go... so there's a degree of creativity in how to make somebody excited, give them the right examples that don't give them the answer, but give them a taster, and then they start imagining a new thing. So that's a newer piece of creativity for me."
~ Participant Eleven

The notion of working through contradictions and maintaining a dialogue between conflicting elements illustrates the process of defying oneself; how individuals move beyond their previous beliefs or practices, continually challenging and reinventing their creative processes. As Sternberg suggests, this continuous self-defiance and evolution can lead to higher levels of personal creativity.

DEFYING THE CROWD

Defying the crowd involves challenging the prevailing views or common consensus among peers in a specific field, such as academia, industry, or design colleagues. This defiance is demanding because creative individuals often seek recognition and acceptance. In short, they face emotional challenges when their ideas are contested or hard to communicate, potentially affecting immediate rewards like article acceptance, funding, or public engagement.

Despite these short-term obstacles, creative individuals understand that ideas which defy the crowd can fundamentally change a field in the long run. This concept mirrors the 'Fixes that Fail' archetype discussed in chapter one, illustrating the paradox where short-term solutions may undermine long-term success across various domains.

Research indicates that creativity and innovative ideas are highly valued but encounter significant barriers. These barriers include the inherent bias towards popular, familiar, or consensual ideas. In this way, defiance is not just a rejection but a complex engagement that challenges and redefines boundaries.

"I'm working in real-time digital 3D creation tool, and so I'm thrust into this weird and wild world of populist kinds of art productions including this very bizarro kind of gaming world that I didn't grow up with and feels terribly ugly and violent and horrible to me, and all wrong. I'm typifying it as my kind of my gut reaction to it. There are a few games that I would be forced to say are beautiful. And so, my big aim in those worlds is to invest some sense of textuality and sensuality and everything I love about craft. I try very hard to invest into those worlds, which is kind of really fighting against a system that I work in. It's set up to make these games that you shoot people and kill other people you know. That's what most people do with that. So it's a bit perverse, you know, trying to make it do something that it's not intended to, but on the other hand, there's, you know, really amazing architects working in 3D now, virtual."
~ Participant Nineteen

DEFYING THE ZEITGEIST

> *"A defier of the Zeitgeist basically does not disagree with the answers of the crowd but rather with the questions the crowd asks."*
> *~ Robert Sternberg*

Sternberg identified the Zeitgeist—the deeply ingrained, often unrecognized assumptions underlying professional fields and society—as a significant barrier to creativity. Challenging these foundational norms requires a rare and profound level of defiance that few achieve. Whispers of such defiance might be found in the works of thinkers like Oli Mould and David Gauntlett, who propose radical reimagining of creativity outside of the dominant Western narrative and its capitalist constraints. Defying the Western Zeitgeist of creativity might look like rejecting its conceptions outright.

Designers challenging and reshaping outdated societal systems, urban spaces, technology, and economic models all exemplify the *Triangular Theory of Creativity*. They defy the crowd and innovate against conventional norms, defy themselves by pushing beyond personal creative limits, and begin to defy the Zeitgeist by questioning the foundational assumptions of their disciplines. Surfacing defiance as part of creativity, in combination with the other '*designerly ways of knowing'* (Cross, 2011), might help actively transform design paradigms and societal functions, necessary for positioning designers as pivotal agents of change.

> *"Defiance is necessary but not sufficient for creativity (at least in our society and ones like it).To be fully creative, individuals need be not just defiant; they also must have the analytical skills to assess the quality of their ideas, the practical skills to persuade others of the value of their ideas, the passion to pursue their creative ideas to their ends, and the resilience to persist in the face of opposition."*
> *~ Sternberg, 2016*

This alignment sheds light on the transformative potential of creative work in reshaping design paradigms by understanding it as an act of defiance against conventional norms, personal limits, and cultural presuppositions. It emphasizes the need for educational and professional environments to foster creativity in designers. Integrating the *Triangular Theory of Creativity* with practical design contexts encourages a deeper cultural appreciation of creativity, viewing it as a dynamic interplay between individuals and their socio-cultural environments crucial for fostering environments that recognize and nurture truly innovative thinking.

RETHINKING THE C'S OF CREATIVITY

Revisiting the 4C Model of Creativity (Kaufman & Beghetto, 2012) offered interesting insights into creative achievement and development in design practice. The research suggested that some participants operated at *little-c* creativity levels, making minor improvements in familiar areas, particularly if they came from non-traditional design backgrounds, and relied heavily on methods for creative engagement, allotting creativity to typical brainstorming or visual activities. This application of everyday creativity revealed a sense of creativity's implicit, passive nature. Creativity seemed to be more actively engaged by participants with traditional design or art, taking the shape of an intentional process. Looking at the full picture of participant data, perceptions of how to approach creativity and what counted as creative contributions spanned the *mini*, *little*, and *Pro-C* definitions, from '*everyone and everything is creative'* to '*years of intentional practice and lessons*.'

While creativity is not bound by design, surely there is room to better acknowledge it. While many designers might externally be viewed in the *Pro-C* category of creative accomplishment, the field's breadth results in an absence of creative practice. A lack of intentional focus on creative practice outside

of design projects may indirectly sideline creativity or contribute to its prominent assignment to linear methods and techniques.

While persistent emphasis on the new, novel, and transformative persist, all attributes of *Big-C* creativity and *zeitgeist-changing* ideas, most reported creative work occurred in lesser magnitude and impact areas. This mismatch between the pursuit of groundbreaking innovations and the relative scale of creative practice and effort, while under-acknowledging its processes, raised questions about the alignment of expectations and actual creative contributions in design practice. Examples from the research included accounts of using the same methods and approaches and expecting something different to happen or the necessity of familiarity when selling new ideas.

FURIOUSLY CREATIVE

Connections to creativity theory and perspectives from this research validate creative work's emotional and intellectual efforts that empower designers to pursue transformative ideas. These connections push us to reconsider creativity beyond the dominant interpretations and measures of usefulness, including the capacity to resist norms, redefine problems, and resist outdated frameworks, thus highlighting creativity's role in driving significant changes. A product-oriented definition of creativity showed up in this project and is most used in research, the private and public sectors, and understanding creativity in organizations (Amabile, 1988; Sternberg, 1999; Unsworth, 2001; Runco & Jaeger, 2012), innovation, and design spaces (as detailed in the first chapter). To that end, the information and knowledge collected in this work suggest a departure might be necessary.

> **"Creativity is the production of novel ideas that are useful and appropriate to the situation (Amabile, 1988)."**

This research has shown that:

- Further interrogation of 'production' might help us understand the divisions of 'creative thinking' and 'creative-doing' in design contexts. Context seemed to be a factor, though some felt creative expression was associated with technical ability and not thinking, while others shared that thinking is only part of creativity.
- *Novelty and originality* are context-dependent, and, despite the marketing speak, 'Big-C' original, transformative, domain-changing ideas are often not the goal. Raising the question: *New in what way?*
- In practice, *usefulness* emphasizes outcomes over processes and people. The dynamic nature of design practice and the broader field indicate that a dominant product-orientated view might inhibit the ability to develop and adapt to rapid change. This raises the question: *Useful in what way?*
- *Appropriate to the situation* could be viewed as an invitation for designers and practitioners to revisit their conceptions and engagement with creativity, to make the implicit, a little more explicit, and consider their individual creativity, and needs beyond typical constraints outlined in the section about creative process.

'Re-embodying' emotional engagement and communication as part of creativity and creative work seems appropriate to the context of design, particularly a dynamic, changing system of design, where adaptability and flexibility are paramount.

Part Five :

Conclusions

CONCLUSION

THINKING SPACES & POINTS FOR DEPARTURE

This section outlines the theoretical and practical contributions of the project, emphasizing the value of both conceptualizing and practicing creativity intentionally within design contexts. It highlighted the importance of research in this area, revealing and discussing relevant previous work. The project enhanced disciplinary knowledge of creativity through practical insights into how creativity unfolded in design settings, exploring creativity through generative research methods, and uncovering various promising avenues for further inquiry. It made apparent the value of researching in this space, at the intersection of creativity, and design practice. Collectively, these insights enhanced our understanding and application of creativity in design practices.

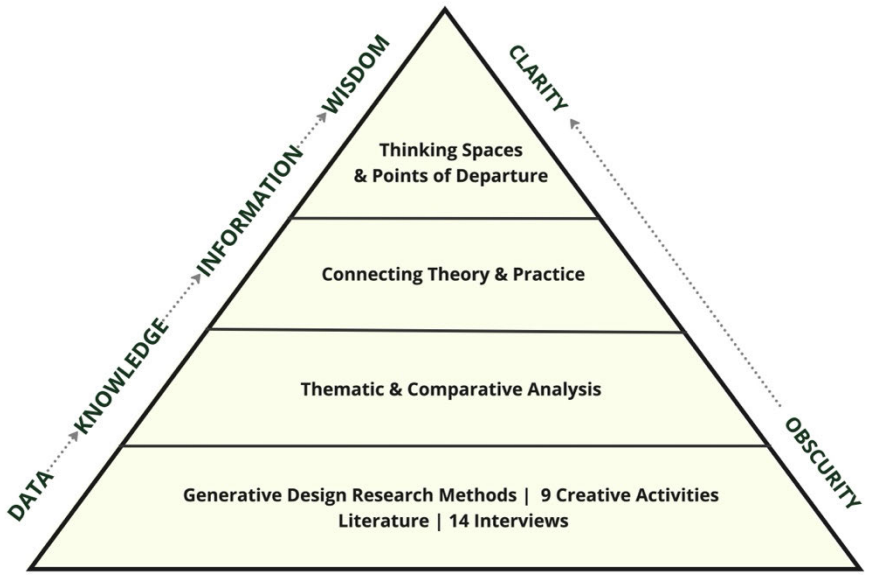


Figure 20 Towards Wisdom in the DIKW model.

RECAPPING THE METHODOLOGY

The project began by establishing a point of entry into the vast terrain of creativity, setting the rationale for understanding the dynamics of creativity and design practice at the time, and laying down a foundational context that informed the research approach. This took time and experimentation. (*The Data level of the DIKW pyramid*) The research phase introduced a design-led research approach, utilizing generative design research methods which deviated from traditional approaches that relied solely on interviews. Instead, it incorporated a hands-on process to observe creativity in action. This method successfully uncovered and highlighted the subtle aspects of creativity that might not be expressed or remembered through conversation alone. The development and engagement in this process to explore creativity with 'creativity-aware' tools provided valuable and unexpected insights into the nature of this type of research itself (see Methods), contributing disciplinary insights specific to the design research space.

The space to move between different levels of analysis—shifting from broad thematic overviews to detailed, in-depth examinations of specific instances and back again surfaced nuanced and impactful insights into how creativity unfolded. (*The Information level of the DIKW pyramid*) Interpreting these insights through experimentation with methods from systems thinking like causal loop diagrams, system mapping (Jones & Van Ael, 2022) and techniques like experience mapping all contributed to making the implicit nature of creativity more tangible, and through that process, revealed the contentious, bordering paradoxical, and sometimes surprising dynamics of creativity in design contexts. (*The Knowledge level of the DIKW pyramid*)

WISDOM

This juncture marked a shift from the initial obscurity of the research themes (see Figure 1) to a clearer understanding of what creativity entailed within design practice. Because of the project's exploratory nature, *Wisdom* meant demystifying the concept of creativity in whatever form that came in, to help make it more understandable and applicable within design practices. That felt like a valuable contribution that could influence perceptions of creativity in both personal creative practices and the broader design field.

Taking on two very broad areas of inquiry, underscored the critical role of exploratory research and confirmed that transforming intricate ideas into practical insights was a recursive, time-intensive, and worthwhile process. Starting with a broad, 10,000-foot view allowed me to grasp overarching themes and challenges. From this perspective, the project established a contextually specific understanding of creativity, inclusive of the practitioners' viewpoint—a perspective previously underexplored. The insights gained bridged the experiences of creativity in design practice with theoretical underpinnings, moving toward wisdom and the ability to apply these insights in more detailed and specific theoretical or practical contexts.

THEORY

Traditionally, design theory has prioritized rational elements over creative ones. This project contributed to a rebalancing by inviting the complexity of creativity into the design space. This exploration revealed gaps, prevailing creativity stereotypes, and common misconceptions about creativity in the discipline. Although there are many similarities between creativity and design theory, cross-references between these domains were scarce. The intersections between creativity theory and design practice are robust and rich, offering fertile grounds for establishing connections. The pronounced relevance and overlap among these theories, as demonstrated by our findings, confirm the value of integration of numerous creativity theories and models within practical applications, although they are too extensive to detail fully here. This recognition sets a foundational layer for further investigation to enrich and expand the existing thinking spaces.

METHODS

Researching creativity presented practical implications that required experimentation and trial and error to understand how to access creativity through research methods. The research approach was created to consider creativity, in its parts, relationships, interactions, and underlying principles through generative design research methods (Stappers & Sanders, 2022) that centered design practitioners as creativity experts and provided a variety of ways to engage with the theme – through

talking, writing, making, reflecting, for example. Combining these approaches made creativity accessible by easing some of the known difficulties in identifying and articulating its processes.

HOW CREATIVITY HAPPENS

Focusing a practice-based perspective brought to the forefront the often-implicit aspects of creativity in design contexts, offering fascinating insights about its qualities and appearances. This research recognized many experiences of creativity, notably in the interactions between people, places, and processes (Csikszentmihalyi, 1996) in design contexts. Research participants told stories of creativity through their experiences. Explaining how creativity might be prompted, nurtured, utilized, valued, pumped up, overvalued, unrecognized, not overly important in some design contexts, and very important in others. These contributions helped to further understand how creativity happens in design practice and further problematizing the space in interesting ways.

CONTRIBUTIONS

Conceptualizing forms of creativity in design practice confirmed an alignment between experiences of creativity in design practice and existing creativity theories. It offered nuanced insights into the divisions of the creative process and design process in practice, highlighting constraints and catalysts, as well as many practical insights valuable to real-world design applications and personal considerations of creativity. It surfaced the dynamic and contradictory nature of creativity in design contexts, and in these tensions, provocations to revisit and rethink creativity as a strategy for design work.

The core contributions to the design field include:

- Disciplinary insights about generative design methods specific to the design research space
- Spotlighting practical tensions, constraints, and conceptions of creativity in practice
- Surfacing the dynamic, contradictory, and sometimes contentious nature of creativity in design contexts
- Advocating for advancing combined theories and models of creativity and design, demonstrating connections and alignment between domains using defiance and conceptions of creative achievement as examples.
- Offering points of departure and recommendations for further exploration

LIMITATIONS & FURTHER CONSIDERATIONS

This project dipped a toe into the vast intellectual territories at the intersection of creativity theory and design practice. The breadth of these areas and the natural presence of constraints made navigating them and perusing new emerging lines of investigation challenging. Creativity can mean different things within the same context, as evidenced in this project, conducted in a large Canadian city and encompassing predominately Western views. Recognition of these limitations prompts for exploration in broader contexts:

- Continue working towards understanding the relationship between creativity & design practice.

- The lack of inter-domain dialogue provoked deeper questioning and reassessment of conventional norms in each field.
- Leveraging the tensions between contradictions and paradoxes as creative forces.
- Cultivating creativity in design practice through deliberate attention to creative practice.
- Rethinking the divide between free and applied creativity in professional contexts.
- What facilitating creativity looks like in design contexts.

Or continuing down paths prevalent in the data and outside the scope of this project:

- Permission Spaces for Creative Exploration
- Creativity and Privilege
- Reassociating Creative Fields; The Creativity Art & Design & Craft Share
- Creativity in Sport
- Creativity and Neurodivergence

PARTING THOUGHTS & NEXT STARTS

Like a chameleon, navigating shifting landscapes, creativity adapts to its surroundings. The challenge, however, lies in our ability to recognize these changes. We often overlook its subtle presence. In practice, creativity assumes many forms, some newly discovered or long underestimated. This project identified territories where creativity's colours became tangible in design contexts, including the nuances of communication, liminal spaces, places of uncertainty, and the frictions and tensions that can come from exchanging ideas and perspectives. The opportunity for more exploration of applied creativity in design contexts is in the divides.

Comprehensive and meandering, this project offers a foundation for several points of departure to further explore creativity through design research methodology, theory, or recommended areas for future research. Or, if this work offered a view of creativity that is different from when you started reading, then the aim of the project was met. Reframing creativity might enrich our comprehension of design and encourage conscious engagement with creativity in everyday and professional life. The provocation from this work is to consider, in all applicable instances: *What is this creativity for?*

To this end, thinking and rethinking spaces for creativity to be engaged, shaped, prodded, reprimanded, or developed intentionally in design practice and the broader field makes good sense, particularly if design is to withstand the expected demands outlined at the start of this paper. Or maybe its conception in the design space might be reimagined entirely.

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Appendices

APPENDICES

APPENDIX A:
Activity Brief
Reflection Prompts
Activity Discussion Guide
Activity Contributions

APPENDIX B:
Interview Discussion Guide

APPENDIX C:
Systems Of Creativity

APPENDIX D:
Informal Causal Layer Analysis

APPENDIX E:
Defining Creativity

APPENDIX F:
Banking From Two Perspectives

APPENDIX G:
Time Matrix

APPENDIX H:
Miro Board Snaps

APPENDIX A: ACTIVITY BRIEF

THE HIDDEN LIFE OF/ UNTOLD STORIES OF THINGS

Your mission is to capture the hidden magic of something around you. Identify the thing, express its form, and share its untold story. This thing is something that you see value in and that others may not. It has a history and a future. You know that this thing is meaningful and your discovery and willingness to share its story will help our collective understanding of its significance, good or bad, today and in the future.

Suggested Timeframe to Complete: ~ 2 weeks

Suggested Time to Complete: ~ 3 hours (take as much or as little time as you need)

Delivery Date

Submissions will be accepted up to December 31, 2023. The researchers' welcome submissions as soon as they are ready. This will help us prepare for the follow up interview.

Materials

Drawing, sculpture or painting mediums, textiles, photographs, digital media, collages, physical prototypes, digital whiteboards, storyboards, AI-enabled graphic generation, written or digital text, and audio recording to name a few. Choose the material you feel will best express your 'thing'.

Deliverables

- A visual representation of "the thing". (We welcome process work too)
- A written or audio recorded or visual presentation of the story
- Written or audio recorded reflection of the process. Choose the length that enables you to get the message across and suits your time availability. A rough guideline for length might be:1 page of writing, 2-4 slides, 2-3 minutes of audio recording.

A submission for this component could be in the form of digital notes, a Word document, a Google or PowerPoint deck, an Excel spreadsheet, voice memos or an audio file, for example. We encourage diverse ways of working and communicating. You can use digital or analog recording methods including audio-recording, note taking, writing, sketching, to document your work. For example, you might voice record your creativity reflections or share your story in written form.

Journey Tips

Keep the reflective prompts in mind as you start this journey. The thing may be animate or inanimate, visible or invisible, but please stay clear of people. This will respect privacy and maintain a comfortable and ethical approach to the research.

One of Many Ways to Start

The approach is up to you and there is no one way to start. You could for example:

- Go to a favorite place near you. "Place" might be outdoors, indoors, a state of mind etc.
- Take with you some form of recording equipment (pencil/pen and paper, camera, audio recorder, smart phone etc.).
- Capture "things" that have a potential magical quality.
- Figure out the best way to select and express the thing you believe to be most interesting.
- Write or tell the story. It could be a curatorial statement or a fictitious history to attach to it.

The Background

This activity hails from the paper *Exploring Creative Pedagogies for Research Methods: Reflections from a Workshop Series* by Henry Mensah (2022), with modifications. In its original form, this is a group work activity that spans two sessions. For the purposes of this study, we have made modifications to focus on individual creative problem-solving.

Visual Representation Example: "The Hidden Life of Trash"

> *"They chose to explore trash as an inanimate object with hidden qualities. To understand the hidden life of trash, they devised a way to interact with it – a technique to interview inanimate objects, to engage in direct dialogue with trash, to better understand the life cycle of the object."*
> *~Mensah, 2022*

Narrative & Storytelling Prompts

Consider the following questions to help craft your curatorial statement or fictional history. These are for inspiration only and there are many more dimensions you may choose to highlight about your chosen thing.

- What makes it magic? Does it have a function?
- What is its species? Who are its relatives?
- How would it behave? How could you reproduce it?
- Who would own it? What kinds of questions could it help answer?
- What other vital information would be necessary to communicate its magical properties?
- Could this thing raise awareness, stimulate discussion or provoke debate about an important social or cultural issue of your choice that will become more relevant in the future?

APPENDIX A: REFLECTION PROMPTS

10 PROMPTS FOR CREATIVE INQUIRY & REFLECTION

- What initial thoughts or ideas did you have when you first encountered this problem? How did you approach it initially?
- Did creativity spark for you in this activity? Can you describe how it showed up for you?
- Can you identify any specific moments or experiences where you felt particularly creative or inspired while tackling this problem? Describe those moments in detail. What factors contributed to that feeling?
- Consider the strategies or techniques you employed to stimulate your creativity during this problem-solving journey. Which ones were the most effective, and why?
- What tools or aids to enhance or influence your creative thinking did you use and why?
- Did you situate yourself in any experiences or environments to enhance creativity in this work? Please describe.
- Reflect on any obstacles or roadblocks you encountered during your creative process. How did you overcome them, if at all?
- Think about any unexpected insights, aha moments, or breakthroughs you had while working on this problem. What triggered these moments of clarity?
- Reflect on the evolution of your ideas and solutions. How did your initial concepts transform over time? Were there any key turning points in your creative process
- Finally, what have you learned about your own creative abilities and processes through this experience?

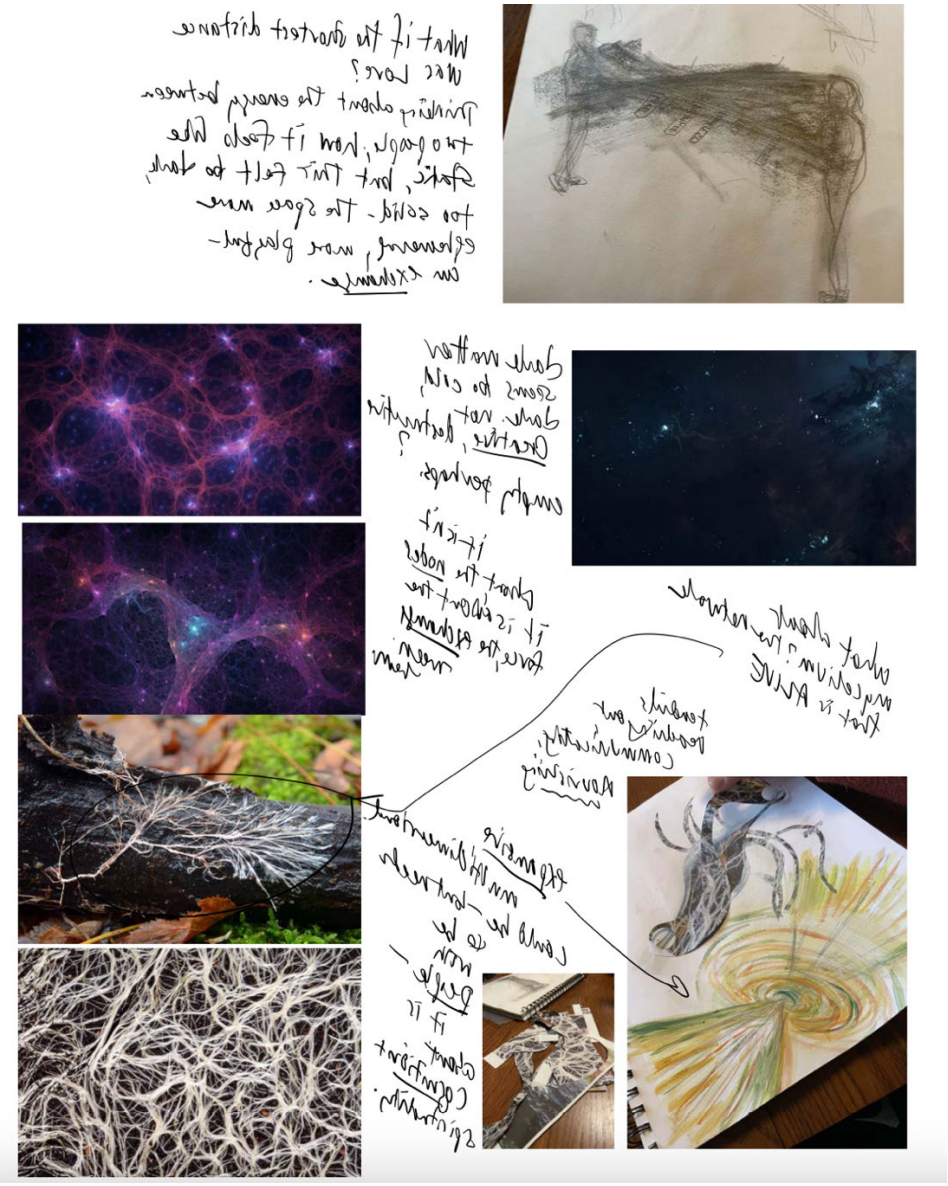
APPENDIX A: ACTIVITY DISCUSSION GUIDE

- Did creativity spark for you?
- How did creativity show up for you in this activity?
- Did you use any tools to enhance creativity in your work? Tell us about them.
- Did you situate yourself in any experiences or environments to enhance creativity in your work?
- Did you follow a process that would lead to a creative outcome?
- At what points during this activity did you feel particularly creative? What factors contributed to that feeling?
- Were there any instances of feeling stuck? Describe them.
- What do you think about the ideas you came up with?
- Having gone through this exercise, do you think creativity is essential for your design work? Why/why not?
- Did the activity reveal anything new about your process that you want to share?
- Misc. Questions
- Can you walk me through your approach to this task?
- What were your initial thoughts or ideas when you first encountered the problem?
- How did your initial concept transform over time?
- Were there any unexpected insights, aha moments, or breakthroughs, while working on this problem?
- Did you find some parts to require more or different “creativity” than others?
- How did you know your work was ready to share?
- What did you learn/what stood out about your creative processes through this experience?
- Did thinking about creativity from the onset change how you approached this problem?
- In your opinion, do you believe that designers possess an inherent capacity for creativity? Why or why not?
- Can creativity be nurtured in design practice?
- What might design practitioners get wrong about creativity today?

APPENDIX A: ACTIVITY CONTRIBUTIONS

CREATIVE ARTIFACT EXAMPLE 1

Selected examples of work created by the activity participants.



Activity Participant Seven ~ Creative Interchange

Self-described design experience: Designer, researcher and strategist working at the intersection of people, systems, and change. I have a special passion and expertise in design for how people learn and use information. Creativity is generating new ideas and objects by sensing and making sense, often by combining elements, externalizing internal thinking processes into making.

CREATIVE ARTIFACT EXAMPLE 2

Selected examples of work created by the activity participants.

Activity Participant One ~ You Might Call it a Book. I Call it a Chronicle

Self-described design experience: For the most part I design learning objects, communication assets, and events.

Creativity begins with imagination- it is how you use your imagination to come up with ideas that are unique, and that come from your own experiences, usually to solve a some sort of problem or puzzle, and sometimes just for fun

CREATIVE ARTIFACT EXAMPLE 3

Selected examples of work created by the activity participants.

Activity Participant Two ~ A Recipe for Grief

Self described design experience: I come from a traditional graphic design background, specifically publishing. I have since moved into more of a leadership role where I oversee a small group of product designers, visual designers, and front-end developers.

Creativity to me is making unusual associations with seemingly unrelated ideas. Also iterating and evolving shared ideas to come up with unique and somehow familiar results.

CREATIVE ARTIFACT EXAMPLE 4

Selected examples of work created by the activity participants.

VIDEO

Activity Participant Eight ~ Coffee & Climate Visual Journey Project

Self-described design experience: *I have taken a special interest in human centered and participatory design. I have worked with a community centre using co-design methods to create meaningful design solutions that can serve the community, and my [Digital Futures] thesis project has focused on creating tools for new media artists that can help strategize the exhibition process.*

Creativity is thinking beyond conventional norms and creating something meaningful (towards you or for others).

CREATIVE ARTIFACT EXAMPLE 5

Selected examples of work created by the activity participants.

Activity Participant Nine ~ An Undervalued Story of Care & Content Labels

Self-described design experience: S*easoned designer with over 20 years of experience in apparel design, materials sourcing, and product development Possess a solid commitment to sustainable practices, a profound understanding of garment construction, and a dedication to innovating through organic and recycled materials.*

Creativity is filtering all the information around oneself and transforming it into something tangible like a concept (ie problem solving) or physical object that can be shared with others to help form new cycles of creativity. I find curiosity to be the most important variable of creativity.

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CREATIVE ARTIFACT EXAMPLE 6

Selected examples of work created by the activity participants.

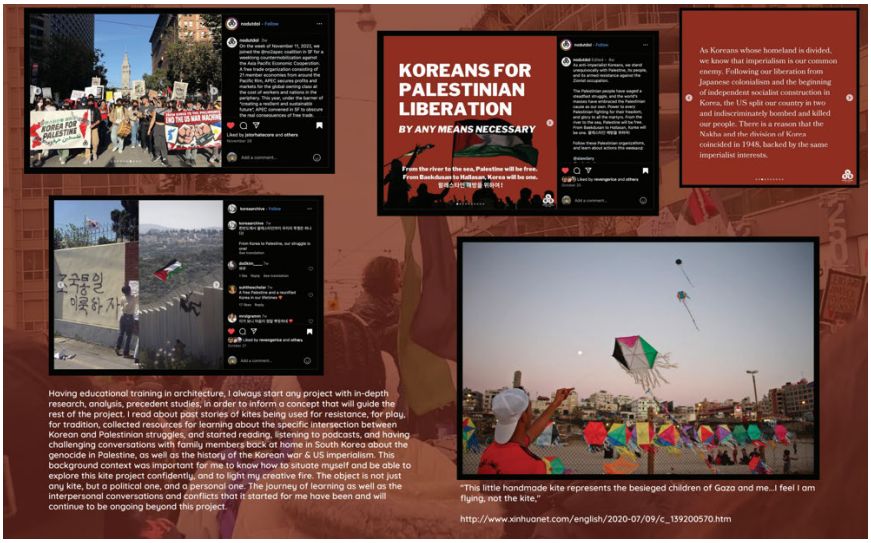
Activity Participant Three ~ Staedtler Mars 780 Technico Mechanical Pencil

Self-described design experience: I work in Architecture, offering services from project procurement and initial design requirements gathering process through construction to project completion. I work on projects of all sizes; from smaller residential up to large institutional.

For me, Creativity is the process of discovering and developing unique ideas. I do this with a 'problem-solving' mindset or lens mostly.

CREATIVE ARTIFACT EXAMPLE 7

Selected examples of work created by the activity participants.



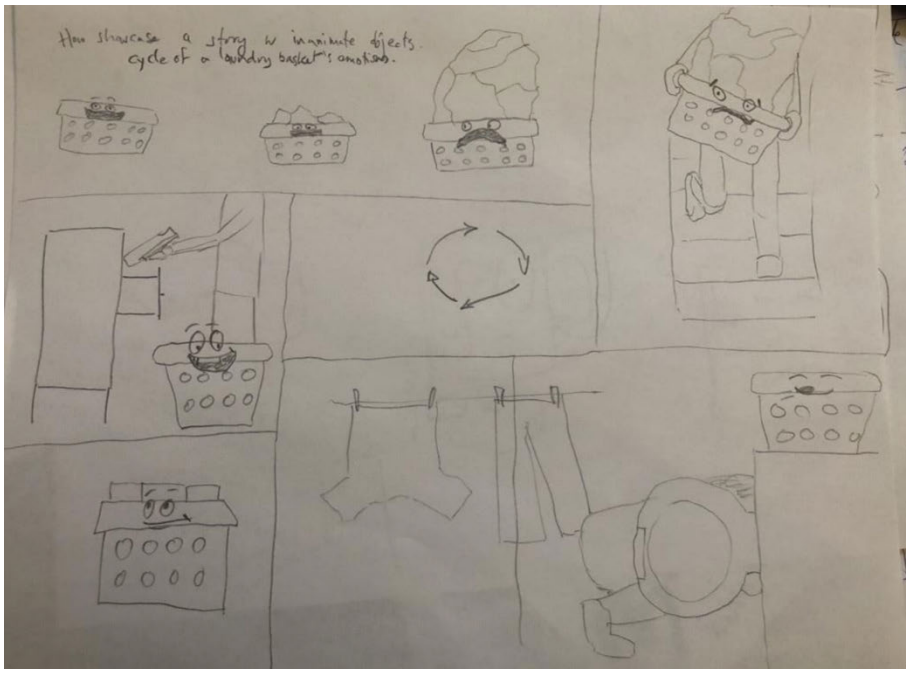
Activity Participant Four ~ Korean (bang pae yeon) or 'sheild kite'

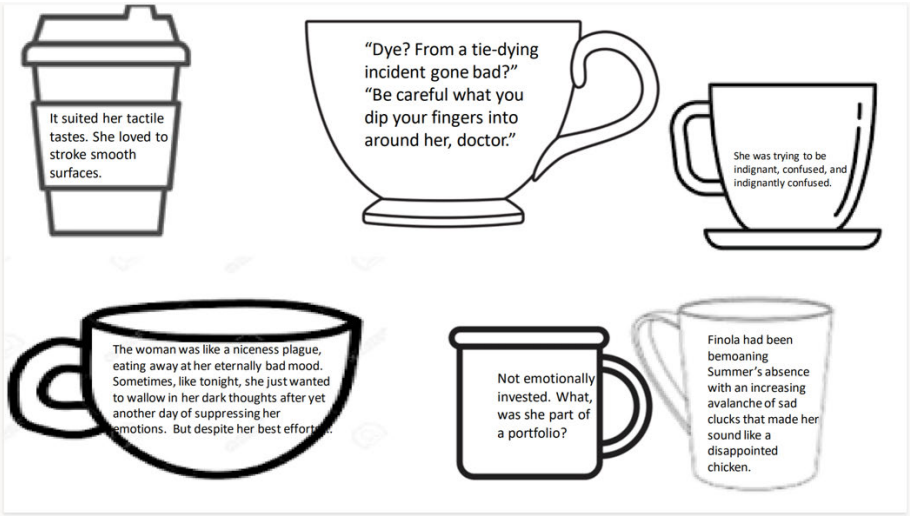
Self-described design experience: *Graduated architecture school focused on designing and fabricating art installations, worked as a designer at a custom fabrication company, staff technician in various workshops (woodshop, digital fabrication, electronics, metal shop, casting, etc), involved in different capacities in the set up and operation of 8 different maker/workshop type facilities with the general task of helping others design and build projects.*

Creativity is taking one's unique experiences, skills, perspectives, and applying them to solving a problem.

CREATIVE ARTIFACT EXAMPLE 8

Selected examples of work created by the activity participants.





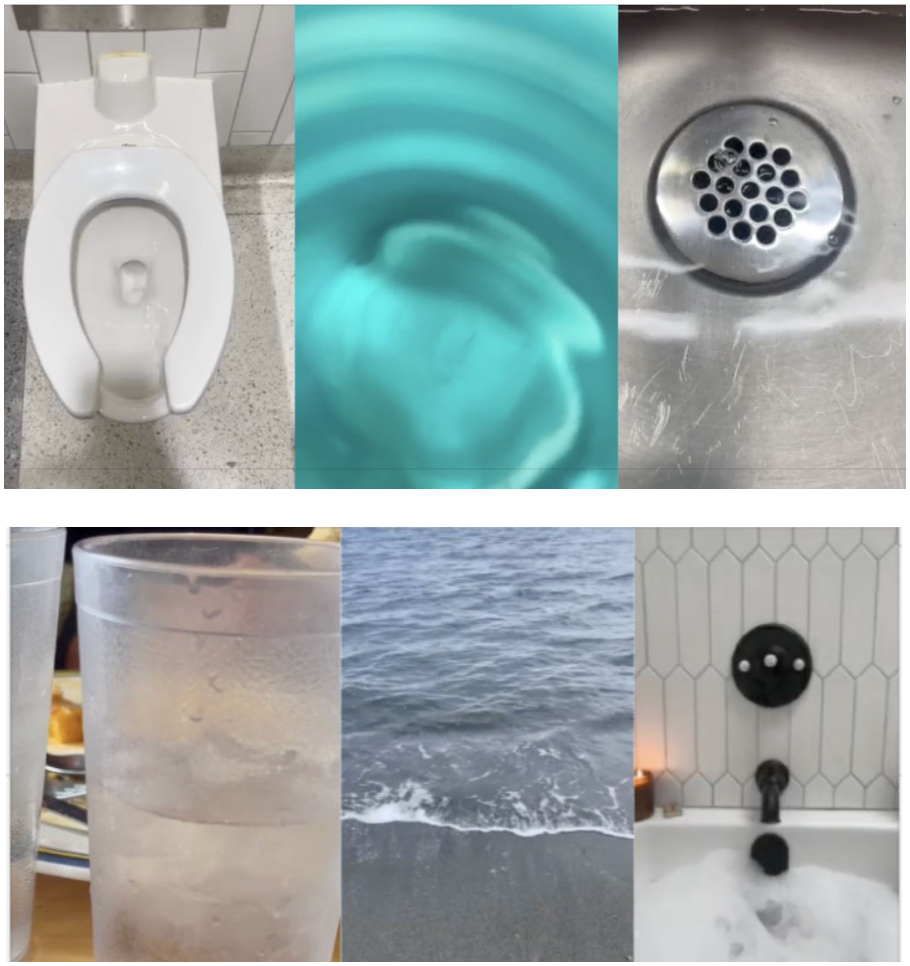
Activity Participant Five ~ Thoughts about coffee cups

Self-described design experience: *I am an engineer and have about 15 years of experience in medical device design. I am interested in how we come together to generate new products and ideas and I am very interested in the power structures within these situations and who becomes a designer vs who is generally designed for.*

I define creativity as something new or an idea that is new to a different context than it is normally found in and the packaging of this idea in a way that allows it to be communicated or shared.

CREATIVE ARTIFACT EXAMPLE 9

Selected examples of work created by the activity participants.



Activity Participant Six ~ Water

Self-described design experience: Worked in structural and environmental engineering, student in a design program, volunteer in a community resilience design lab, hobbyist maker/designer.

Creativity is the ability to think “outside the box” and consider opportunities/ideas/concepts that are not ‘mainstream” or are less common, potentially contentious, or a seemingly original way is approaching something such as art, a project, work, etc.

APPENDIX B:

INTERVIEW DISCUSSION GUIDE

Creativity

- When you reflect on the concept of creativity, what thoughts or ideas come to mind?
- How do you think about the role of creativity in the context of design?
- In your opinion, do you believe that designers possess an inherent capacity for creativity? Why or why not?
- Are there specific methods, principles, or theories that you find influential in fostering creative thinking in design?
- Can you share some examples of how creativity is nurtured in your design work?
- Can you tell me when creativity significantly affected a design process or outcome?
- How do you define creativity? Do you have different definitions?

Experience

- Do you think creativity strikes? How does creativity show up for you?
- Can you tell me about a time when you felt particularly creative and describe it?
- What tools do you find most conducive to enhancing creativity in your work?

Assessment

- Do you employ specific methods or approaches to evaluate the creativity of an idea or design concept?
- Can you tell me when creativity significantly affected a design process or outcome?

Process / Practice

- Could you provide an example of a time when you felt particularly creative? What elements contributed to that feeling? (Asking the same question differently)
- What would that look like if you could create the perfect environment and conditions for creative thinking?
- What tools or experiences do you find most conducive to enhancing creativity in your work? (Asking the same question differently)

Blocks

- From your perspective, what are some factors that may impede creativity?
- What frustrates you about the creative process? Are there hurdles and blockages?
- What do people get wrong about creativity?

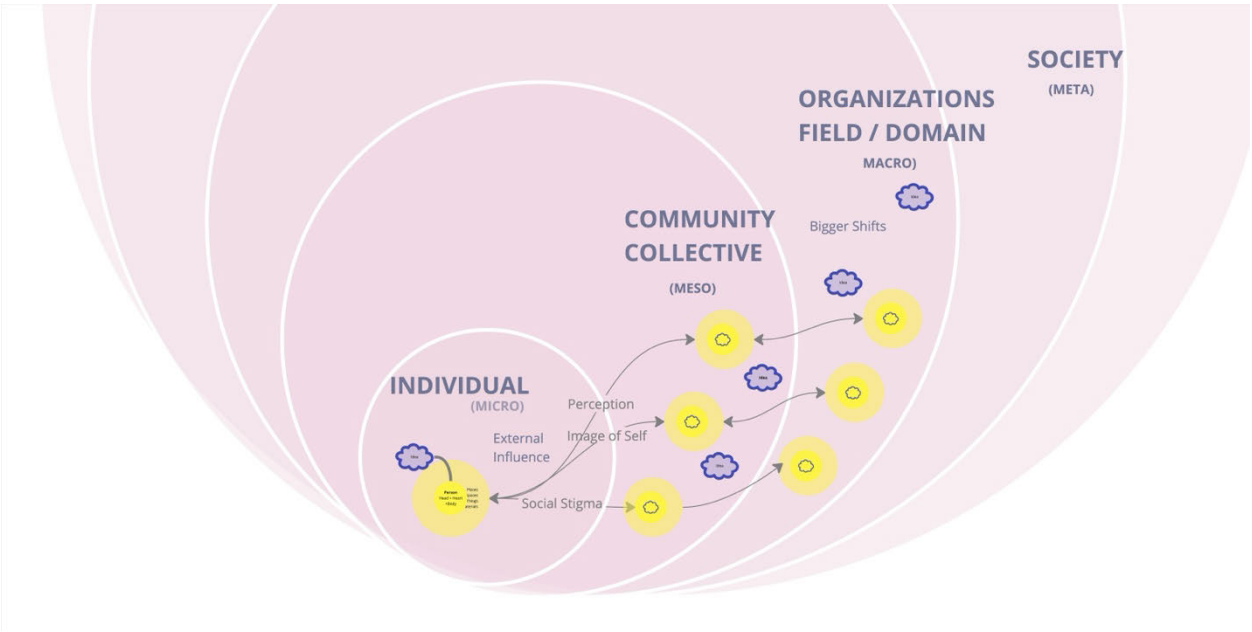
Future

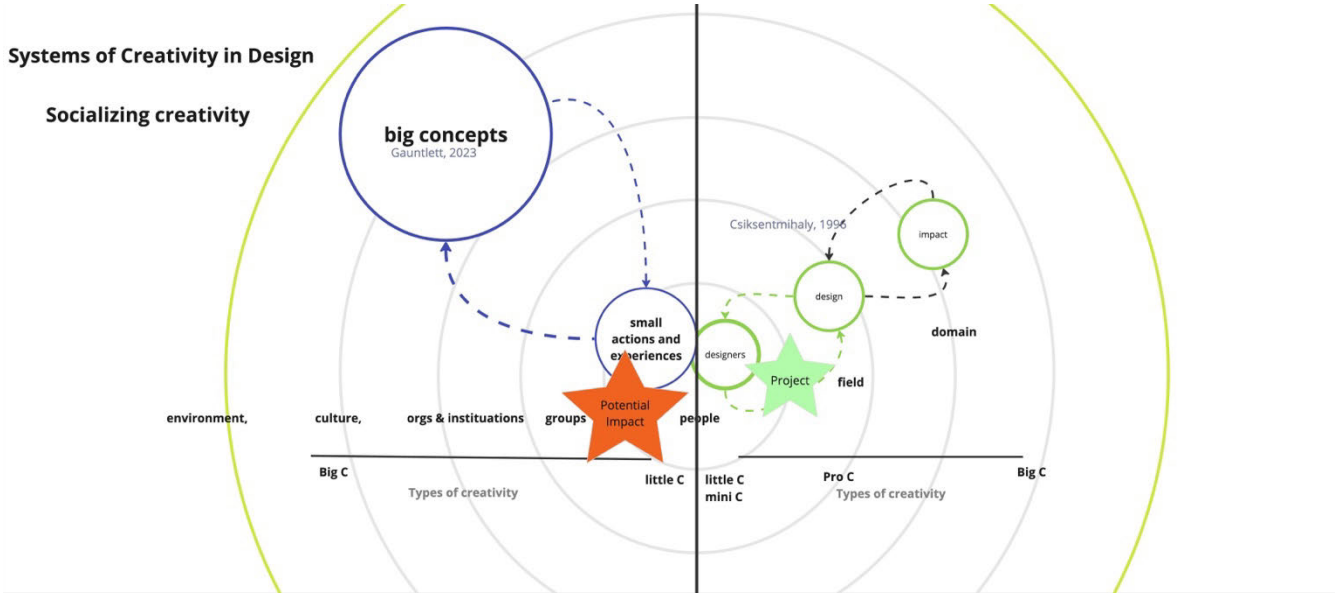
- Looking ahead, do you anticipate that humans will become more or less creative in the future?
- What excites you about the future of design?

Closing

- Has anything else come up for during this conversation that you'd like to share?

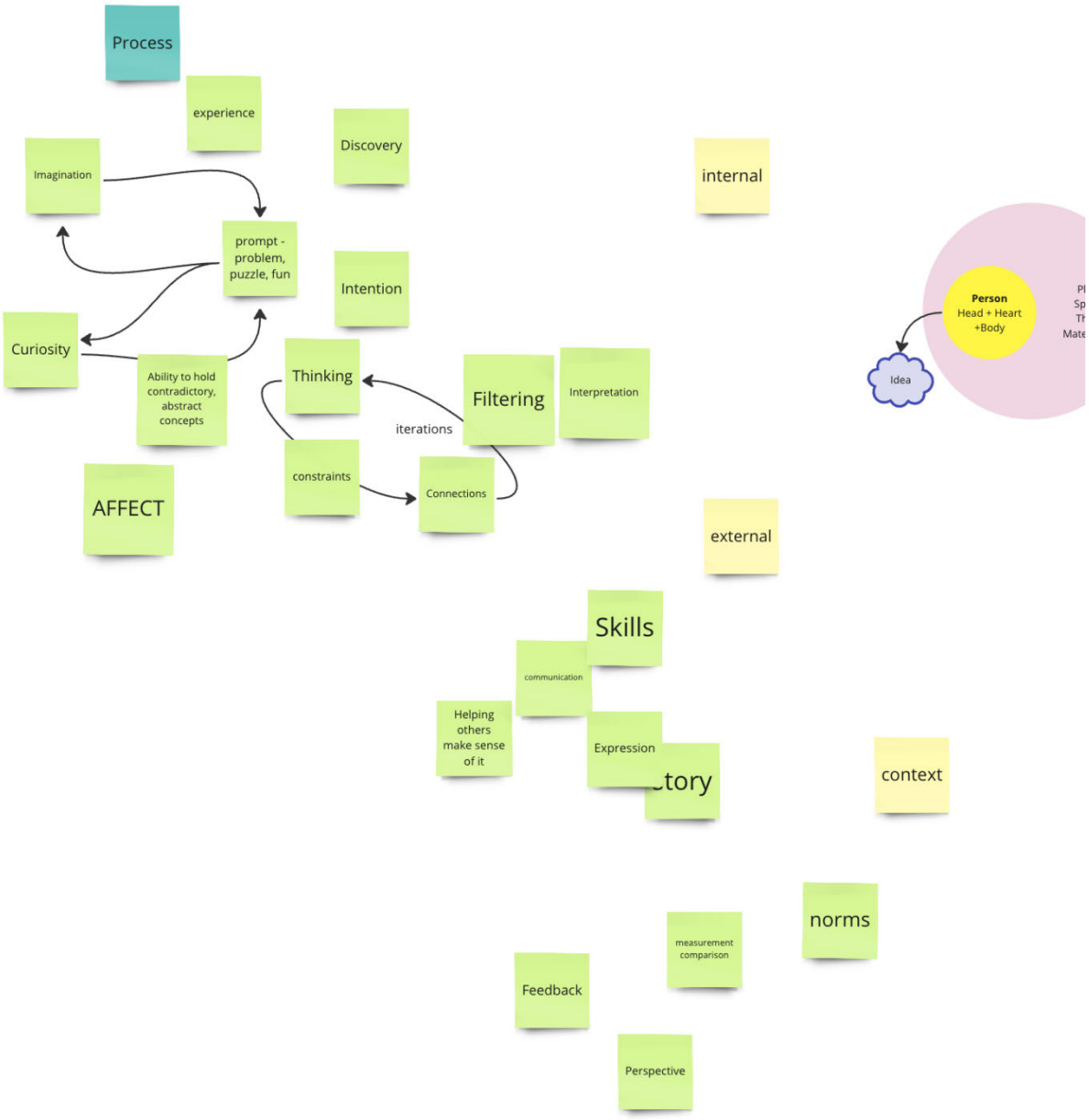
APPENDIX C: SYSTEMS OF CREATIVITY





APPENDIX D: INFORMAL CAUSAL LAYER ANALYSIS (CLA)

APPENDIX E: DEFINING CREATIVITY



APPENDIX F: BANKING FROM TWO VIEWS

A consultancy view:

> *"I think it's just about vibe, right? It's like it's a spectrum. So, you're like how creative or, you know, culturally open is this client? If they're more culturally open, then you can be a little bit more creative. But equally, if they're less creative, like a bank for example, they're not going to say don't give us new ideas. You can still be creative within the structures of a bank. It's just going to have more rules around it. It's got to be this, and the website has to make money. So you can still be creative. If you work with people that are a little bit more open and playful. Then great, you get to do that, which again is less about creativity, I think, and more about my personal perception of what creativity is, which is playfulness and less bound by rules."*

A creator view:

> *"Some clients, they're not on the creative team, so they don't know what they want until they see it. So, like play is really important and just trying things because you get to do it later. My friend and I always talk about like "secreting". Sometimes we like we just saw something funny, and we just secret into your world, you know? And then maybe a client will bring it in. One time, we did this bank project .Thiis wasn't our idea, but someone thought it might have been funny to have, chickens that have sweaters on. Like what? Chicken have sweaters? What a funny parameter to work around. It didn't end up going. It ended up becoming like way more regular and it but it's like you aim to these like funny things, and it gets kind of distilled sometimes. You have to get weird to just try different things. Chickens wearing sweaters exists because people make sweaters for chickens not to pluck their feathers out so much when they're stressed. I think it ended up being like coffee cups. You know, like the idea got so boring. It was just like so plain. Will animal people be mad about this? And you're like coffee cups and you're like, OK."*

APPENDIX G: TIME MATRIX

(Miro board data sysnthesis, 2024)

APPENDIX H: MISC. MIRO BOARD SNAPS

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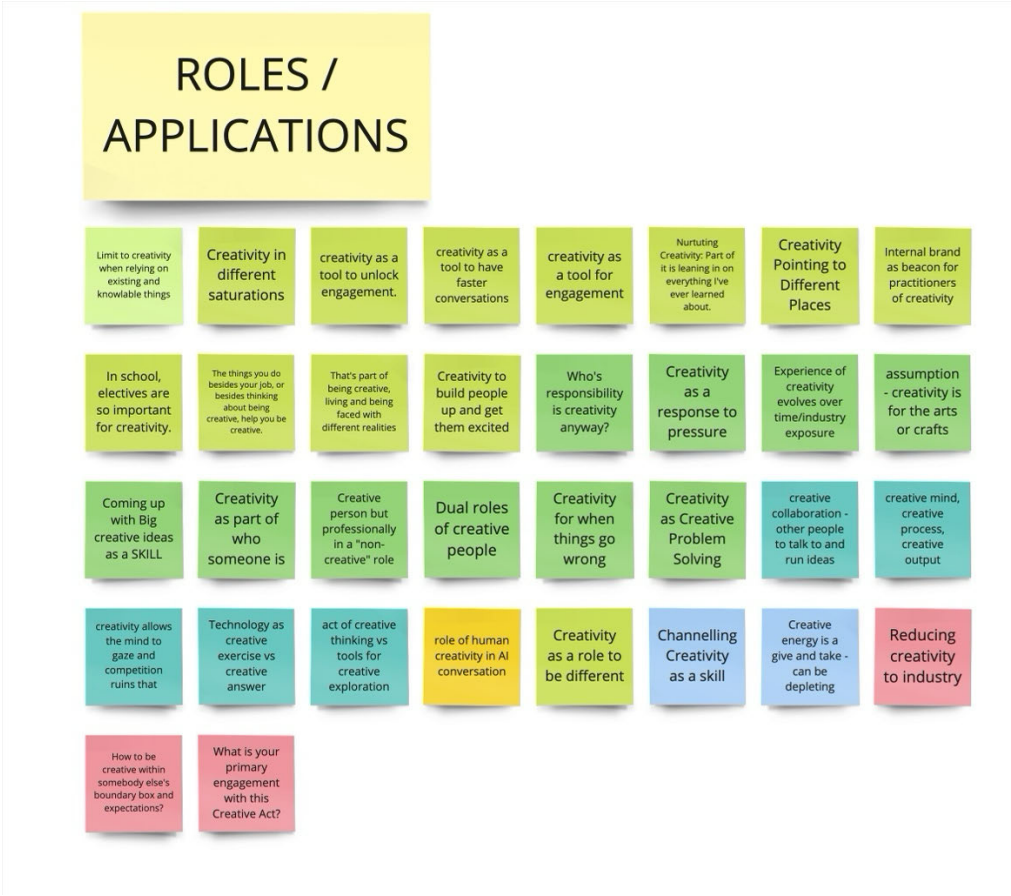

APPENDIX H: MISC. MIRO BOARD SNAPS

APPENDIX I: SAMPLE CODES